FEEDSTUFFS

The Weekly Newspaper for the Feed Industry

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Opinions Vary, But—

'Storage Rate Cut May Stimulate Feed Activity'

By ROGER BERGLUND and THOMAS E. LETCH
Feedstuffs Staff

What effects will the new reduced government grain storage rates have on the feed business?

Opinions vary from "little or none" to "a great deal"—and, as might be expected, the situation varies among areas and among different types of businesses. However, with the grain and feed industries so closely related and with so many grain area firms in both businesses, the reduced warehouse income on storage of government grain apparently will have some effects which are bound to influence developments in feed manufacturing and distribution.

Some persons feel that prospects for reduced income from storage will stimulate firms which have been primarily in the grain business to get into feed milling on either a new or expanded basis.

Others discount this idea, at least in their particular areas, and say that the business already is too competitive or that there "already is too much mill building."

However, based on a cross section of opinion in various grain areas, it does appear that in many instances new or increased attention will be given to feed operations. The new lower government grain storage rates and revised storage terms ordered by USDA this week are said to be a principal reason for this in some cases.

In other cases, the more far-reaching effects of the government farm program are held to be a more important factor than the storage program in changes which are foreseen for livestock feeding and the feed industry. For example, in areas where barley or grain sorghum production is being stepped up because of cutbacks in wheat acreage, it is felt that

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FEEDSTUFFS *Features This Week*

WHO WILL BE THE FEED MANUFACTURER OF THE FUTURE?—Oakley Ray, director of market research for the American Feed Manufacturers Assn., analyzes the role of the feed industry and points out important considerations in the future development of the industry. If the industry is not able to achieve its basic objective, there may be no separate feed industry tomorrow. Page 28.

LAYING HEN NUTRITION—Dr. G. F. Combs describes a method for calculating the methionine requirement of the laying hen as influenced by several factors. The article provides a new, more specific approach to protein levels and amino acid supplementation of laying hen rations. Page 18.

FEED PLANT AUTOMATION—Engineer Paul Berg says that "It may be timely to take stock of what automation can or cannot accomplish." A discussion of various aspects of automation in feed manufacturing will be found on page 96.

FEED ADDITIVES—Dr. M. L. Scott warns that "we must not set unachievably rigid regulations that throttle research." Dr. Scott discusses the role of feed additives in relation to safety and government regulation. Page 84.

PLANT IMPROVEMENT—A modernization program at a major feed plant has resulted in marked improvements in efficiency and in substantial cost savings. See page 74.

GRAIN BANK PLAN—"Customers say that the grain bank plan saves them time and labor," an Iowa feed mill owner says. Details of the firm's grain bank plan are reported beginning on page 40.

TRANSPORTATION—The general traffic manager for a major feed firm says that transportation is the basic consideration in choosing a feed plant site. He gives his reasoning on this point on page 78.

CONTRACT EGG FARMING—Low egg prices and inadequate flock management by egg producers are causing contract egg farming to decrease in importance in Georgia, a Georgia extension poultryman points out. Page 116.

ATOMIC ENERGY FALLOUT—The feed industry should recognize the possible detrimental effects of fission products as expressed as fallout from nuclear detonations, a West Virginia University scientist warns. Page 158.

FARM MIXING—Feed men will be interested in an agricultural college report for farmers on costs of on-farm mixing and the relationship to size of operation. Page 168.

CONFERENCES—Reports on pelleted feeds and additives for cattle were among those given at the University of Nebraska Feeders Day; summarized on page 10. Poultry scientists discussed the value of reserpine in promoting poultry growth and production in a tranquilizer conference at the University of Minnesota; see page 12. The possibility of adjusting characteristics of eggs to increased nutritional value was discussed at the Pacific Dairy & Poultry Assn. convention; see page 114. Summaries of feeding studies reported at the University of Missouri Spring Livestock Day are given on page 124.

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Purina 6-Month Sales Off; March Volume Up

ST. LOUIS — U.S. and Canadian net sales of Ralston Purina Co. were down slightly from the year before in the six months ended March 31, according to a recent report to Purina stockholders, but March volume "achieved a new all-time record."

Donald Danforth, chairman of the board, said, "Total volume was approximately 10% greater in March than had ever been shipped in any previous month. Earnings, too, showed a substantial increase over March, 1959.

"Predictions are hazardous," he told stockholders, "but your management is both confident and determined that total profits by the close

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USDA and Industry To Study Techniques Of Poultry Rejection

By JOHN CIPPERLY
Feedstuffs Washington Correspondent

WASHINGTON—U.S. Department of Agriculture officials look with disfavor upon the request of some poultry processors—vexed by a high rate of bird rejects—that they be permitted to sell the apparently unaffected parts cut from birds rejected because of interior carcass lesions.

USDA objects to such a practice because it is contended that the lesions evident after slaughter indicate that at some time the entire bird has been affected by a disease in the blood stream.

However, USDA is not content to stand on its current standards as

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Swift to Build Mill in Illinois

CHICAGO—Construction of a 12-ton-an-hour feed mill at Mendota, Ill., by Swift & Co., Chicago, is scheduled to begin in about two months, according to W. J. Chapin, head of Swift's general feed department.

Facilities will include a concrete block mill building; an attached one-story, metal-clad warehouse; elevated steel tanks for ingredient storage, and bulk storage steel tanks at grade level.

"The mill will have the most modern and efficient equipment avail-

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USDA Issues New Storage Rates, Terms

By JOHN CIPPERLY
Feedstuffs Washington Correspondent

WASHINGTON—In issuing terms for storage and handling charges for Commodity Credit Corp. grains in its new Uniform Grain Storage Agreement, which will be issued to the grain warehousemen shortly for signatures, the U.S. Department of Agriculture brought down the final curtain on this controversy—probably to the continued discomfort of the warehousemen both country and terminal.

However, the country houses may, on balance, suffer the most income cut in the failure of the CCC board to make larger adjustments than the ludicrous liberality announced by USDA at the last session of the trade negotiating team.

New rates ordered by USDA are viewed by the trade as exorbitant penalties after the trade had so vigorously complied with requests from USDA to expand storage facilities to

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U.S. Court Upholds Iowa Foundation's Stilbestrol Patent

WICHITA, KANSAS—The Iowa State College Research Foundation has been upheld in its patent infringement suit against Gooch feed companies. The U.S. District Court, sitting in Wichita, Kansas, held as valid and infringed the patent which covers a method of growing and fattening cattle by feeding minute amounts of stilbestrol.

The Gooch Feed Mill division of the Western Star Mill Co. and other listed defendants were enjoined from continuing their infringement and ordered to account for damages resulting from the infringement.

According to the court's ruling, the foundation is entitled to compensation as determined by statutory provisions for recovery in patent infringement actions.

The court record listed these defendants in the petition filed by the Iowa State College Research Foundation: John J. Vanier, O. Burr Ross (now at the University of Illinois),

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Tomorrow's Industry

NOT EVERYONE CAN GET to the American Feed Manufacturers Assn. convention in Chicago May 9-11, but the importance of the event is well-recognized by those who stay home to mind the mill as well as by the hundreds who attend. The convention represents something of a distance and time marker in the 365-day lap around the business track.

The start of a new calendar year is one sort of a marker, to be sure, and fiscal years and crop years represent other turns along the race route. However, for the important number of AFMA participants, the convention marker is something of a special one. It provides opportunity to check the wind and stride of a large number of runners and also a chance to get a first-rate mental rubdown at the program sessions. (It also gives one a chance to wonder how come the annual gatherings seem to be getting so much closer together when according to the calendar they are spaced, give or take a few days, a year apart.)

MORE SERIOUSLY, the May muster serves its most important function because it is at this time that the industry's chief concerns about itself come in for closer examination than at any other time during the year. The self-examination more often than not provides a realistic progress report on the stature and role of the industry in its service to agriculture and food production.

Progress of the industry, as one perceptive feed man observed the other day, seems to be achieved in moving through a series of "eras." These are not entirely distinct from one another in all of their aspects, but they can be recognized for the most part as important historical periods.

First (to start relatively recently) there was the World War II period with its scramble for allocations, price orders and accompanying regulations and a hungry market for all the production that could be put through the mill. Then came the nutrition era, when discoveries came so rapidly it was hard to keep up with the latest, and emphasis was placed on the industry's ability to quickly translate research to improved formulas. Medicated feeds came strongly to the forefront during this period, too.

Then came a period when a great deal of thought, effort and capital were first concentrated on improvement of production facilities and distribution methods. More recently the industry has moved into a period of deep concern over stringent and unreasonable federal controls on use of additives.

BEGINNINGS AND ENDS of these eras, of course, are not distinctly marked, and certainly the ramifications of each have merged into the whole of current industry efforts. Improvement of the product and manufacturing methods continues to be major elements of the industry's drive toward greater efficiency and service. These matters have largely been placed in the hands of competent technical people, with the momentum of the eras that launched progress in these directions likely to be surpassed by future achievements.

RIGHT NOW THE INDUSTRY is in the midst of an answer-seeking period that is so fundamental that perhaps it cannot be classified as an era at all. If it could be so classified, it would be something like this: The period of finding its true role in food production and marketing. Or, more directly, as stated in these questions posed by Oakley Ray, AFMA market research director, in his excellent article on page 28: Who will be the feed manufacturer? Will there be a separate feed industry in the world of tomorrow?

These questions, or similar ones, have been asked by industry leaders in the past, but never so frequently nor so urgently as at present. The search for answers today is the overriding concern of the industry's top management.

Specialization in agriculture, which the feed industry has helped to create by pioneering more efficient livestock and poultry production, is in turn creating a major and not-to-be-denied competitive factor for feed manufacturers. More farmers are making their own feed. As Mr. Ray points out, "The size of the average farm production unit is continuing to increase. This will intensify the struggle to determine who will produce the increasing feed supplies which will be needed."

How does the industry meet this competition? Mr. Ray has some answers—sound ones, yet ones that inherently present the industry with its greatest challenges. By and large, they must be answered with the conviction firmly in mind that the industry's existence, as a distinct industry, is based fundamentally on supplying of quality feed at a lower price than it can be obtained elsewhere.

Whatever else the industry must do to support its major role, it must recognize it has the key to the current era firmly in its hand. There will be some groping, but with diligence it will find the right doors.

How's Business?

AN EVERY WEEK REVIEW OF FORMULA FEED BUSINESS VOLUME, INCLUDING PRICE, SUPPLY AND DEMAND TRENDS

Reports from around the nation indicate that current formula feed sales are at about the same level they were a week ago but below that of a year ago. Why? Well, there don't seem to be any definite answers, but many manufacturers believe that sales aren't taking off like they should for this time of year because of cuts in poultry flocks, because of reduced pig farrowings and because producers are too busy with spring field work. Encouraging reports from the Corn Belt said farmers in the region were now able to hold off on pouring wet corn into feed lots because high winds have done a lot toward drying the commodity and because most of the corn in greatest danger of spoiling has been fed. The wholesale feedstuffs price index dropped 1.4 points to 75.9 this week. It was 85.1 the comparable week a year earlier. USDA said the feed-grain index was 67.2 this week, only slightly below the previous week but 3 points under a year ago. This week's hog-corn ratio, based on Chicago prices, was 13.3, just about even with last week's and .5 above the mark of a year ago. (Feed markets in detail on pages 174-176.)

Northwest

May came in better than April went out, Northwest feed manufacturers say, but current volume still isn't up to par with the year-ago level.

An enthusiastic manufacturer reported that his plants were "snowed" with business, especially in poultry lines. Other trade representatives were less enthusiastic, but pretty much convinced that formula feed consumption is bound to swing upward in this new month.

Slower starter feed business indicates that pig herds and poultry flocks are smaller than last year. Broiler and dairy feed movement was reported to be slightly better than last week, turkey feed volume appeared not to have changed much and hog feed sales were still on the weak side.

Prices of manufactured feeds probably will take another slight dip, following the trend in the ingredient market.

Southwest

The long hoped-for spring pickup in formula feed sales still has not put in its appearance and feed manufacturers in the Southwest are experiencing another slow week. Some major units indicated a four-day run while others expected to run a slow five days.

Turkey starter sales have held up very well and mills engaged in broiler feed sales also report good sales volume.

Pig starter volume is still fair and hog feeds have improved in volume with reports that the stocks of wet corn have diminished and are not now hampering hog feed sales as they have in the recent past.

Weakness in most major ingredients will make for slightly lower formula feed prices. Protein meals were under pressure and soy, cottonseed and linseed meals all posted lower prices. Alfalfa prices were sharply lower with the adjustment to a new crop basis rapidly getting under way.

Northeast

Dairy feeds continued to hold up, with the emphasis on complete feeds. However, dairy feed ingredients gave ground and the "handwriting is on the wall."

The grazing season is not too far off but as yet pastures still are too soggy to utilize without damage.

Sales of formula feed in general were pretty good but mills continued to operate less than 40 hours a week. One spokesman said some of the downturn in the mills' output may be coming from the extensive use of portable mixers on farms.

Egg mashes did well during the week, and starting, growing and turkey feeds are forging ahead. Broiler feeds are lagging behind the leaders.

The outlook for end products is good. Broiler and egg prices are expected to hold up and growers may be able to make some headway this year.

Broiler levels in the East ranged from 15½ to 17¢ lb., and growers with good quality birds can make a profit in the upper range.

Central States

During the week ended May 4, the situation in formula feeds in this area was a mighty close carbon copy of what took place the week just preceding — which in turn matched up very closely with the third week in April as well.

Commercial mixed feed manufacturers advise that there is room for improvement in demand. Relatively moderate sized backlogs are one of the very best indications of what has been happening. For the most part, mills are running on a straight 40-hour week but there are a few spots where a little overtime is being put in on Saturdays.

Insofar as kind of shipment is concerned, the bulk of the fresh business coming in seems to be of the rush type. Mostly two to three days is what is wanted.

Grass is greening up all over the area and in some sections is very lush as the result of the heavy snows last winter. Cool temperatures in the intervening weeks and intermittent rains have put pastures in fine shape.

A little complaint is being heard over the relatively moderate current demand for some of the poultry feeds, especially chick starter. Other types of feed are being moved in a fair way but general demand ought to be better.

South Central

Nothing new developed this week to give a lift to formula feed sales. Business continued to follow along in

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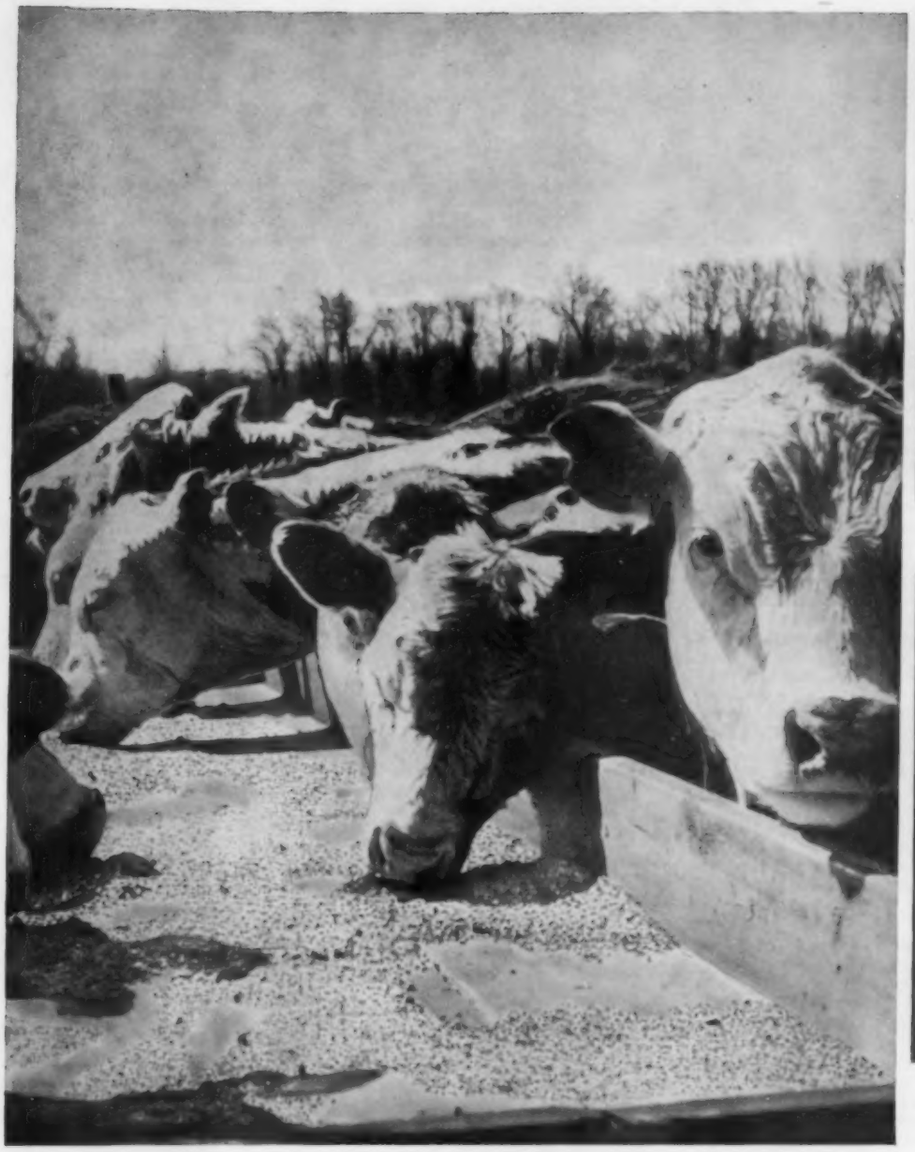

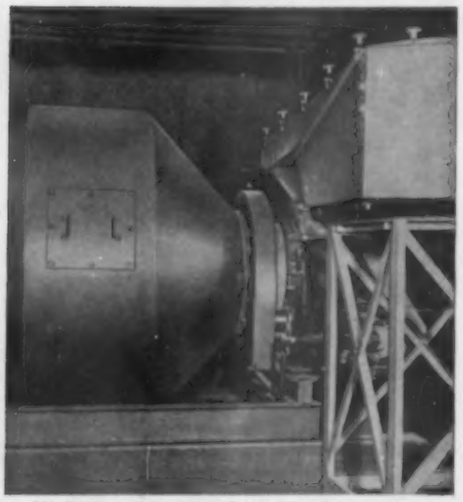

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Here is a fortifier that takes full advantage of all the latest scientific developments. There are separate formulations for dairy cattle, beef cattle, sheep and goats, and horses. And each has been blended to the specific needs of the animals it will feed. C-F Premixes help provide them with a balanced diet to promote strong and healthy growth and quickly bring them to their *full profit potential*... even on the lower quality roughage.

PETER HAND'S *RED TAPE* SAVES YOU TIME, TROUBLE AND MONEY!

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New Schedule of Grain Storage Rates Announced by USDA

WASHINGTON — The new schedules of rates and charges under the revised Uniform Grain Storage Agreement represent substantial reductions from those of the current agreement, a U.S. Department of Agriculture release points out.

Storage rates and handling charges under the revised agreement were announced this week by USDA. The agreement will be effective for the storage year beginning July 1.

The UGSA establishes rates and terms for commercial storage of price support grain and related commodities. This includes grain in the inventory of the Commodity Credit Corp., and that which is stored by farmers as security for price support loans. The eight commodities covered are wheat, corn, oats, grain sorghums, barley, rye, soybeans and flaxseed.

The USDA release follows:

"Storage rates are reduced an average of about 3¢ a bushel on an annual basis, or from about 16⅓ to 13⅓¢. This represents an average reduction of 19%."

"No Geographic Variations"

"The new rate schedule contains no geographic variations and fewer commodity variations than are currently in effect. This will simplify the over-all rate structure. Except for oats, the annual storage rate for commingled storage of all the commodities will be the same—fractionally above 13.5¢ a bushel. For oats, the annual rate will be 10.22¢.

"Changes in the handling charges (for loading-in and loading-out) vary considerably, as shown in the tables with this release. These charges were adjusted to reflect the additional and current information gained in a detailed field survey of storage and handling costs which was carried out last fall. Some handling charges have been increased somewhat. These are more than offset by decreases in others.

"It is currently estimated that CCC will have about 2 billion, 500 million bu. of the eight UGSA crops in commercial storage in the 1960-61 year. On the basis of this estimate, each reduction of a cent per bushel in storage rates will mean an annual saving of $25 million. With an average cut of 3¢ a bushel in the new storage rates, the total reduction in CCC costs for the year will be about $75 million—for storage alone.

"To reflect more complete information which was developed in later studies, some of the handling charges which were suggested by the department in a press release on March 16 were increased somewhat. These changes, which will be incorporated in the new schedule, result in slightly lower estimates of CCC savings on handling charges. Actual realized savings will depend largely on the volumes of grain which move into and out of the CCC holdings (receiving and loading-out). It is now expected that these savings will be in the 5-10% range.

"Taking reduced storage rates and handling charges together, best current estimates are that the government will save from $85-100 million during the 1960-61 storage year, as a result of the revised rates and charges.

"Farmers Will Benefit"

"Farmers who store grain commercially will also benefit materially from the reduced storage rates. When a farmer has grain in a warehouse, held as security for price-support loans, he pays the UGSA rates—which now will be lower. Producers who reseal price support grain on their own farms after the first loan year will receive less in storage fees. However, this will be more than offset by the lower costs farmers will pay for the larger quantities of their grain normally stored in commercial warehouses. Over-all, the reduced rate structure will mean substantial gains for farm producers as a group.

"Various revisions and clarifications in the terms and conditions of storage under UGSA will be included in the new contracts. These revisions, which were worked out in substantial agreement between representatives of the storage industry and CCC, reflect current developments in storage operations.

"The new agreement, which will include all of the terms and conditions in detail, is now being put in final form. As soon as this work is finished, and the agreements are duplicated, copies will be available.

"The new agreement will be offered to all eligible commercial warehousemen on an individual basis. About 11,000 warehouses are 'signed up' under the present UGSA and, therefore, elegible to store price support grain and oilseeds.

"Two accompanying tables give rate and handling charge comparisons. The first gives the schedule which will be in effect July 1, for the 1960-61 year. The second gives the current schedule, which has been in effect since the UGSA was last revised in 1956."

DOW DIVIDEND

MIDLAND, MICH.—The board of directors of The Dow Chemical Co. has declared a dividend of 35¢ per share on its common stock payable July 15 to stockholders of record at the close of business on June 15, 1960.

Handling and Storage Charges Under New (1960 Revision) Uniform Grain Storage Agreement
(Cents per bushel)

Commodity	Truck grain: Receiving	Truck grain: Loadout	Truck grain: Total	Rail or water grain: Receiving	Rail or water grain: Loadout	Rail or water grain: Total	Commingled storage: Daily	Commingled storage: Annual
Oats	2.75	.75	3.50	1.75	.75	2.50	.028	10.220
Barley	4.25	.75	5.00	1.75	.75	2.50	.037	13.505
Corn	4.25	.75	5.00	1.75	.75	2.50	.037	13.505
Wheat	5.00	.75	5.75	1.75	.75	2.50	.037	13.505
Grain sorghums	5.00	.75	5.75	1.75	.75	2.50	.037	13.505
Soybeans	5.00	.75	5.75	1.75	.75	2.50	.037	13.505
Rye	5.00	.75	5.75	1.75	.75	2.50	.037	13.505
Flaxseed	6.50	.75	7.25	2.00	.75	2.75	.037	13.505

Handling and Storage Charges Under Present (1956 Revision) Uniform Grain Storage Agreement
(Cents per bushel)

Commodity	Area	Truck grain: Receiving	Truck grain: Loadout	Truck grain: Total	Rail or water grain: Receiving	Rail or water grain: Loadout	Rail or water grain: Total	Commingled storage: Daily	Commingled storage: Annual
Oats	All	2.75	.75	3.50	1.50	.75	2.25	.032	11.680
Barley	All	4.75	.75	5.50	1.50	.75	2.25	.045	16.425
Corn	All	3.75	.75	4.50	1.50	.75	2.25	.045	16.425
Wheat, grain sorghums, soybeans, rye—									
	I	5.75	.75	6.50	1.50	.75	2.25	.043	15.695
	II	5.75	.75	6.50	1.50	.75	2.25	.045	16.425
	III	6.25	.75	7.00	1.50	.75	2.25	.046	16.790
	IV	7.25	.75	8.00	1.50	.75	2.25	.047	17.155
	V	7.25	.75	8.00	1.50	.75	2.25	.049	17.885
Flaxseed	All	6.50	.75	7.25	2.00	.75	2.75	.049	17.885

STORAGE RATES

(Continued from page 1)

hold farmer grain placed under loan. Trade comments have been to the effect that now with much empty storage in parts of the wheat belt, USDA is in a buyers' market and is taking advantage of the warehouse industry.

(See rate comparison in table on page 4.)

Grain industry representatives broke off negotiations April 29 with a statement that they could not accept USDA proposals for reduced handling and storage rates. The statement was signed by all 18 members of the grain industry committee. The industry representatives left the joint meeting with USDA following an offer by the government representatives to raise their handling charges originally proposed for grain by ¼¢ to ¾¢ bu., a move still unsatisfactory to grain warehousemen.

Complaints also have come from the trade and USDA officials that the activities of Congress, such as the Symington Senate Agriculture Subcommittee, now investigating CCC, have forced this decision on USDA to make a cut in compensation to the storage industry.

Such complaints do not appear valid after hearing the secretary in a press conference here this week state that the congressional activity "had nothing to do with this correction in rates." He stated that his department had detected some incorrectness in rates as far back as October, 1958, when they started a preliminary investigation to determine if efficiencies might not justify a deeper examination of these charges in view of the over-all mounting costs of storage of surplus grain stocks. He continued that in 1959 USDA put into the field cost study teams to ascertain cost data from warehousemen. The data thus obtained represents the basis for the new rate structure and no data of congressional committees has been used in building the rate structure of the new UGSA contract, he added.

May Save $100 Million

He commented that the new rate structure would save the government and farmers as much as $100 million per year.

The secretary was asked what he would do if the warehousemen refused to sign the agreement under the new terms, to which he replied they were at liberty to do so and return to their normal operations since the agreement was voluntary.

However, persons familiar with the grain storage industry are certain that, but with some rare exceptions, the industry will fall in line nursing their financial wounds and sign up for the one year term promised under the recent negotiations—if they can be called such.

There appears to be one small ray of hope in what to date has been an unsatisfactory attempt to renegotiate a harmonious agreement—the likelihood that the new UGSA will be subject to revision again at the end of one year, presumably in 1961.

This is the first year in the history of this rather inadequate document that there has been a substantial rate cut—and this cut takes the rates back to payment provisions which are said to be lower than those in effect under the Brannan administration.

PENB Plans Annual Meeting Next Year

CHICAGO—The 21st annual meeting of the Poultry & Egg National Board has been scheduled for April 10-12, 1961, at the Sheraton Towers Hotel in Chicago, according to Lloyd H. Geil, general manager of PENB.

The 1960 fall meeting of the PENB board of directors will also be held at Chicago's Sheraton Towers, on Dec. 5-6, accordington to Mr. Geil.

Banks Cut New Loans For Broilers in South

ATLANTA—New bank loans for southern broiler production moved down sharply from February to March as bankers reduced their loans direct to producers, according to a continuing survey conducted by the research department of the Federal Reserve Bank of Atlanta. Loans to dealers, however, increased from February to March, the April 29 broiler credit report said.

"Year-to-year comparisons reveal a substantial cut in new loans for broiler production in March of this year from the level in March of last year," the survey report stated. "Total repayments declined also, however, so loans outstanding were reduced moderately."

Broiler trade credit outstanding in March at selected feed manufacturing firms increased somewhat, the Atlanta bank reported, although the total outstandings fell slightly short of that in March, 1959.

More funds were advanced this March to dealers and direct to producers, the report continued. Meanwhile, chick placements in five district states served by the bank increased in March, although they barely matched those of a year earlier.

Production School Screening Session Set

KANSAS CITY — Program plans for the annual Feed Production School are going forward, and a program screening session will be held May 17-18 at the Hotel Bellerive in Kansas City.

Members of the production school committee and program participants will be on hand to work out final details for presentations to be made at the school.

The school will be held Sept. 21-23 at the Continental Hotel in Kansas City. Several hundred feed men are expected to attend.

The program this year will deal with various aspects of grinding and mixing. A special feature will be a presentation on how to comply in the plant with government medicated feed regulations.

I. M. Hyland Heads Buffalo Exchange

BUFFALO — Irving M. Hyland, assistant vice president of Cargill, Inc., was elected president of the Corn Exchange of Buffalo this week by the board of directors.

I. M. Hyland

Mr. Hyland, who also is eastern regional manager of Cargill, Inc., has been acting president of the exchange since the resignation last September of Everrett H. Flinchbaugh.

Other officers elected at the annual meeting were Stanley A. Tirrell, manager of the Pillsbury Co.'s grain division at Buffalo, vice president, and Charles R. Coad, grain buyer for General Mills, Inc., Buffalo, treasurer.

Frank Catanzarite was appointed executive secretary and traffic commissioner and Mrs. Lucy R. Leonard was named assistant treasurer.

MANEY BROS.
MILL & ELEV. CO.
Minneapolis, Minnesota
Distributors in the Upper Midwest States for
SMALL'S DEHYDRATED ALFALFA MEAL

"All Wool and a Yard Wide"

In early America, some textile manufacturers made a low-grade, adulterated woolen cloth and stretched it to a yard wide; itinerant peddlers then represented it as a quality product of honest measure. Reputable merchants, to distinguish their merchandise from that of fraudulent competitors, began to advertise their woolens as "all wool and a yard wide". To this day, the expression continues to be synonymous with "top quality".

Since the day the dehydrated alfalfa industry was born, Small's Dehydrated Alfalfa has been known as "all wool and a yard wide"—a product you can always count on to be uniform in grade, tops in quality, and consistent in eye-appeal. Small wonder that a product of such absolute dependability continues to be the first choice of discriminating buyers who are formulating "feeds with a future"!

ARCHER-DANIELS-MIDLAND CO.

ALFALFA DIVISION

Box 356 Kansas City, Mo.

FOR FEEDS WITH A FUTURE

Small's dehydrated alfalfa

Clearance Given to Dow Coccidiostat

MIDLAND, MICH.—Zoamix, a new coccidiostat, has been granted registration as a food additive according to the manufacturer, The Dow Chemical Co.

"Acceptance by federal regulatory agencies follows several years of exhaustive tests of the product under both controlled research and commercial conditions," Dow spokesmen said. "Much important information on the excellent performance of Zoamix in actual commercial use has been gathered from broiler growers in Canada, where the product has been marketed for some time.

"A major advantage to use of Zoamix is that established tolerances permit it to be used right up to market time, with no withdrawal required. Other important characteristics include its low toxicity which gives an exceptionally wide margin of safety in use, and a performance record showing top weight gains and feed conversions."

Zoamix is being marketed as a premix formulation containing 25% of the active ingredient anticoccidial, Zoalene. Soybean oil meal and soybean oil are used as the carrier materials. Initial marketing is for use in manufactured broiler feeds, a rate of 1 lb. per ton of finished feed providing the recommended .0125% level for continuous feeding.

"As used by the feed industry," Dow reports, "the new Zoamix premix is free flowing, dust-free, and does not settle out of mixed feeds. It is non-caking and has no properties that would cause blending difficulties. Stability is excellent under all conditions of normal use, including multiple pelleting, storage, and cyclical heating and cooling. No palatibility problems have been encountered, and compatibility with all commonly used feed ingredients and additives has been well established."

For prevention and control of coccidiosis, according to Dow research reports, coccidia species most common and most pathogenic are also the ones most susceptible to control by Zoamix.

The new coccidiostat is being marketed in red and white 50-lb. bags.

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FDA Regulation on Zoalene Issued

WASHINGTON — The Food and Drug Administration this week issued a food additive regulation clearing the use of Dow Chemical Co.'s Zoalene as a coccidiostat in feed for chickens.

Published in the Federal Register May 3 was a regulation describing how Zoalene (3,5-dinitro-o-toluamide) may be used in chicken feed and giving the tolerances for residues of the additive and its metabolite in the edible tissues of chickens.

FDA said that Zoalene may be used in the prevention and control of cecal and intestinal coccidiosis in chickens caused by Eimeria tenella or Eimeria necatrix. The quantity of the additive to be used or to remain in the finished medicated feed shall not exceed 125 parts per million (0.0125%). Labeling also is specified in the regulation.

Tolerances were established as follows for residues of Zoalene and its metabolite (3-amino-5-nitro-o-toluamide) in the edible tissues of chickens that have received medicated feed containing the additive: (a) 2 parts per million (0.0002%) in the uncooked muscle meat and fat of chickens, (b) 6 parts per million (0.0006%) in the uncooked liver and kidneys of chickens.

POULTRYMAN DIES

TROY, N.Y.—Benjamin Chuckrow, 64, vice president of Chuckrow Sons, Inc., one of the largest poultry firms in the state, died recently, apparently of a heart ailment.

CORN PROBLEM EASES

AMES, IOWA—The threat of serious spoilage occurring to thousands of bushels of wet Iowa corn this spring has nearly passed. Strong drying winds helped the stored corn through the recent critical weeks. Much of the corn was picked last fall at a high moisture content. Then, during a wet and humid winter, some of the grain picked up additional moisture, increasing the danger of spring spoilage.

Arbor Acres Acquires Mount Hope Farms

GLASTONBURY, CONN. — As a first step toward entering the table egg field, Arbor Acres Farms, Inc., Glastonbury, Conn., has announced the acquisition of Mount Hope Poultry Farms, Batavia, N.Y., breeder of White Leghorns.

Henceforth, according to Henry Saglio, president of Arbor Acres, the Mount Hope research program, involving extensive experimental work with 22 purebred lines, will be carried on at Glastonbury. Breeding work now being carried on at Batavia will be continued for an indefinite period.

Mr. Saglio went on to say that the move was prompted, after months of careful consideration, "by the demands of Arbor Acres' expanding foreign markets for a superior White Leghorn and by the evident potential of current Mount Hope breeding work." He added that no decision has yet been made as to when Arbor Acres will make their new Leghorn available.

He said that the impending sale of Leghorns will have no connection with the sale of Arbor Acres broiler breeding stock, "nor will the Leghorn breeding program affect in any way the longstanding Arbor Acres effort to develop new and better broiler breeding stock . . . it will, in fact, be carried on as an independent program within the Arbor Acres organization."

Cincinnati Feed Club To Elect New Officers

CINCINNATI, OHIO — Departing from a long-time custom, members of the Cincinnati Feed Club will vote for only one slate of candidates at the annual election set for May 16.

Candidates include: Chairman, Lucian Garner, Quaker Oats Co., Lawrenceburg, Ind.; co-chairman, Alex Steele, Kentucky Chemical Industries, Inc.; secretary-treasurer, Fredric Emmert, F. L. Emmert Co., and directors, Edward G. Anderson, E. Kahn's Sons Co., and E. P. Henderson, Schenley Distillers, Inc.

E. J. Lang Joins Linwood Stone Firm

DAVENPORT, IOWA—E. J. Lang has been named vice president in charge of the calcium carbonate division of Linwood Stone Products Co., it was announced by Paul J. McCarthy, Sr., president of the company.

E. J. Lang

Mr. Lang formerly was associated with the Ralston Purina Co. and more recently was vice president of Iowa Limestone Co., Des Moines. He has served as a board member and vice president of the Northwest Feed Manufacturers Assn.

The Linwood company, prominent in building and industrial lime products, produces a complete line of calcium carbonate products for the feed trade under the trade name Super-Cal.

Appointed Technical Service Manager

SKOKIE, ILL. — Dr. Herbert T. Peeler has been named technical service manager of the feed ingredients department of International Minerals & Chemical Corp.

Dr. H. T. Peeler

Before his promotion, he was supervisor of nutrition research, a post he held since joining IMC in 1958. Prior to that he was director of nutrition research at Universal Mills in Fort Worth, Texas, for two years, and head of the nutrition section and later manager of research for Western Condensing Co., Appleton, Wis., for six years.

He received his bachelor's degree from Texas A&M College in 1940. He received his doctorate from Cornell University in 1948, and was a research associate there two years after graduation.

He is a member of the American Chemical Society, American Institute of Nutrition, Poultry Science Assn., American Dairy Science Assn., American Society for Animal Production, Association of Vitamin Chemists and Sigma Xi.

Slow Demand Weakens Oilseed Meal Futures

MEMPHIS, TENN. — A quiet demand for the cash article influenced lower oilseed meal futures prices during the past week on the Memphis Board of Trade. Continued warm weather around the nation led the slowness in the cash oilseed meal market, and futures moved downward as the result.

During part of the period, soybean oil meal eased because of an on-track condition. This cleared up, however, and futures gained some strength. Later, with soybean oil gaining, the meal declined.

There was a fair follow-up of forward old crop cash soybean oil meal purchases, brokers reported.

Cottonseed oil meal was weak and some on-track meal turned up at one southern point. Notices during the period were issued for delivery of 1,200 tons of bulk solvent cottonseed oil meal against the May contract, and these were promptly stopped.

Some interest in new crop cottonseed oil meal futures was evidenced.

Memphis basis soybean oil meal closed May 3 unchanged from April 26, unrestricted soybean oil meal 25¢ @$1.25 ton lower, and bulk solvent cottonseed oil meal 25¢@$1.25 lower.

Trading during the period amounted to 4,600 tons of unrestricted soybean oil meal and 2,000 tons of bulk solvent cottonseed oil meal.

Cargill, Inc., General Credit Manager Dies

MINNEAPOLIS — Robert Allen Scharf, 59, general credit manager of Cargill, Inc., died this week.

Mr. Scharf was a graduate of DePauw University, Greencastle, Ind., and Northwestern University, Evanston, Ill. He was a member of the Credit Financial Management Assn. and the Chicago Association of Credit Men.

FEED OPERATION PLANNED

SWINK, COLO.—J. E. McLelland, Fort Worth, Texas, has announced the purchase of the old Holly Sugar Co. factory here to be used in a large feeding operation and for a feed mill. The property was acquired for an undisclosed sum from the S&M Machinery Co., owned by Martin Smith and T. C. McMilland, Oxnard, Cal.

New Controls Set On Water Absorption In Poultry Processing

By JOHN CIPPERLY
Feedstuffs Washington Correspondent

WASHINGTON—The U.S. Department of Agriculture has launched a field team survey of processing plants in the poultry industry in an attempt to bring about uniform conditions in the retention of water in frozen products. USDA officials have declared that moisture absorption by poultry is distorted in some plants due to a combination of factors.

Specially-trained teams of USDA poultry inspectors have been assigned to make checks at plants operating under federal inspection. They will weigh poultry before washing and after chilling to assure that procedures being used are satisfactory.

USDA officials assert that the field team efforts are purely instructive and educational and are designed primarily to maintain the high standards of quality and value which the poultry industry itself chose when it advocated the mandatory poultry inspection law. The USDA's attitude is that uniformity of moisture retention guarantees to the consuming public that quality of the product is assured and that value received reflects the fairness of the price.

USDA officials say that the field teams will start their work immediately and expect them to complete the educational and instruction service within 60 days. When the teams complete their work the government plans to issue administrative regulations under the poultry inspection law to fix maximum limits of water retention in poultry and turkeys.

New Procedures

As a result of extensive tests, USDA has formulated new procedures to control the amount of moisture absorbed by poultry during processing and chilling.

The department is calling to the attention of poultry processors their responsibilities under the Poultry Products Inspection Act to keep the amount of moisture absorbed by poultry within the limits necessary under good commercial operating procedures. Processors are being advised of the steps they must take to have their chilling procedures approved.

(Turn to NEW CONTROLS, page 173)

Ben Ferguson to Head New Dodgen Division

HUMBOLDT, IOWA—Ben R. Ferguson, feed nutritionist and cattle feeding authority, has been appointed manager of the newly-formed western division of Dodgen Industries. The announcement was made by John Dodgen, president of the Humboldt, Iowa, firm.

B. R. Ferguson

For the past five years, Mr. Ferguson has been manager and nutritionist at Feed & Supply Center Inc., Twin Falls, Idaho. Prior to that he had managed the Ranchway division of Colorado Milling and Elevator Co., Denver, after having been chief nutritionist for two Nebraska feed firms.

Graduated from Colorado State University at Fort Collins, Colo., in 1931, Mr. Ferguson did post-graduate work at Colorado University, Boulder, Colo., and Denver University, Denver.

In his new capacity, Mr. Ferguson will direct sales of Dodgen feed handling and feed processing equipment in the western states, including the Dodgen "All-Purpose" bulk body line, the line of "Mix-O-Vator," portable feed plants and the Dodgen Portable Feed Mill and Pelletizer.

WARNS AGAINST ANOTHER BROILER SURPLUS

GLASTONBURY, CONN.—Persons producing broiler hatching eggs or chicks have been warned by one of the nation's major breeders to ask themselves these questions before they put out breeding stock:

"Do I have an assured market for the hatching eggs or broiler chicks I will produce?

"Do I have reasonable assurance of receiving a fair price for these products?

"Is my operation soundly financed?"

Henry Saglio, president, Arbor Acres Farm, Inc., Glastonbury, says those who can't answer all of these questions with a "yes" are taking "one of the longest gambles in the history of this business." He says the gamble will hurt the entire broiler industry—and the breeder and hatching operations most of all.

Mr. Saglio disseminated those words of caution because: "Only recently have prices returned from their disastrously-low levels and already placements of breeding stock and activity at every level of broiler production are proceeding at a rate which—if past experience is any indication—will bury this industry with a surplus big enough to make last year's depression seem like a dress rehearsal."

He believes "sound and careful planning by all segments of the broiler industry today will build a better business for all of us tomorrow."

Nine-Month Earnings Down, ADM Reports

MINNEAPOLIS — Archer-Daniels-Midland Co. has announced net earnings of $2,625,095 for the nine months ended March 31.

That was equal to $1.65 a share on the common stock, compared with $4,341,823, or $2.70 a share, for the same nine months a year ago. The company's fiscal year ends June 30.

Directors of ADM declared a dividend of 50¢ a share, payable June 1 to stockholders of record May 13. This is ADM's 135th cash payment and its 115th consecutive quarterly dividend. There are 1,587,171 shares of common stock outstanding.

John H. Daniels, ADM president, attributed the reduced earnings largely to the depressed processing margins prevailing in the soybean and flaxseed industries for the past several months. He explained that the margins on oil seeds and wheat flour are "too low to return a satisfactory profit, resulting in the shutdown of many of the industries' processing plants, including some of ADM's from time to time during the winter months."

Partially offsetting these reduced returns, Mr. Daniels said, was a continuing increase in earnings from ADM's expanding lines in the chemical group. He noted that earnings from the company's chemicals during the nine months were more than double those of a year ago.

The ADM president also reported that the company's overseas operations showed a substantial improvement in profit for the first three quarters over last year and that foundry products and bentonite operations continued to gain over 1959 earnings.

North Dakota to Get 'Emergency' Grain

WASHINGTON — Ezra Taft Benson, secretary of agriculture, has designated three counties in North Dakota—Burleigh, Morton, and Oliver—as emergency areas where farmers can buy government-owned feed grains at current support prices.

Public Law 86-299, enacted during the last session of Congress, authorizes the secretary to sell feed grains owned by the Commodity Credit Corp. at current support prices to provide feed for livestock where he determines there is an emergency area as defined by law. During the past year, drouth reduced feed grain supplies in these North Dakota counties, making them eligible for assistance under this act. CCC-owned corn, barley, and oats, as available in the North Dakota counties, will be offered for sale under the program.

FEED PLANT EXPANDED

FREELAND, MICH.—A remodeled and expanded feed plant has been opened at the Charles Wolohan Elevator in Freeland.

AFMA Announces Addition of 14 Firms To Membership List

CHICAGO—Announcement of the addition of 14 firms to the American Feed Manufacturers Assn. membership has been made.

New members are: American Scientific Laboratories, Inc., Madison, Wis.; Bureau de la Nutrition Animale et de l'Elevage, Marseille, France; Central Agricolo, S.A., David, Chiriqui, Panama, R.P.; G. E. Conkey Co., Nebraska City, Neb.; Creative Service Associates, Inc., Dayton, Ohio; Truman Fowler Co., Naperville, Ill.; Good Life Chemicals, Inc., Effingham, Ill.; Hardy Scales Co., Maywood, Cal.; Jacobsen Publishing Co., Chicago; Kauffman Feed Mill, Waterman, Ill.; Missouri Grain & Feed Assn., Higginsville, Mo.; Montana Feed Manufacturers & Dealers Assn., Sidney, Mont.; Usines De Stordeur, S.A., Wilsele-Louvain, Belgium, and Woods Mill Service Corp., Fort Dodge, Iowa.

NEW STOCKYARDS OPEN

SAN FRANCISCO — Producers Livestock Marketing Assn. of Los Angeles opened its new $350,000 plant in Artesia this week following the closing of the L.A. Union Stock Yards last week. The new stockyards are in Dairy Valley near Artesia on 57 acres. Completion of the entire stock yard and offices is scheduled for about June 30.

USDA Study Compares Costs of Feed Manufacturing, Distributing Systems

WASHINGTON—A study was recently reported by the U.S. Department of Agriculture concerning the relative efficiency of different methods of organization and operation in the feed milling and distribution industry.

The booklet, Marketing Research Report No. 388, is titled "Costs of Procuring, Manufacturing and Distributing Mixed Feeds." It may be obtained from the Office of Information, U.S. Department of Agriculture, Washington 25, D.C.

Dr. Richard Phillips, Iowa State University, conducted the study for USDA. In a summary of the booklet, he explains that costs were studied in four types of feed manufacturing and distributing systems. These include:

(1) Premix operation with mixing done by dealers, (2) concentrate operation with grain added by dealers, (3) centralized complete-feed operation through dealers without mixing facilities, and (4) independent manufacturer-retailer operation.

Detailed quantity and cost data were obtained from three plants of each of the four types of manufacturers and from 20 retailers. Estimates of costs of making and distributing 40,000 tons of a hypothetical laying mash were prepared in each of the four systems.

When all of the factors, except those directly related to the type of operation, were held constant, the relative efficiencies of the methods were estimated. Results may be observed in Table 1.

The retail-manufacturer system resulted in a slightly lower cost than the others, Dr. Phillips reported. Because of the efficiencies, or inefficiencies, of specific functions which may characterize any given plant, operations of individual companies can be expected to deviate from the cost levels shown in the report, USDA noted.

The study shows that some of these efficiencies may relate to such factors as managerial efficiency, capacity utilization, and return-haul arrangements, which are not included in the study.

Also, the type of organization may not affect costs as much as some other factors. Some of these include variations in costs of ingredients which are affected by distance ingredients are shipped, quantity of ingredients and whether they are purchased in bulk or bagged form.

The volume of feed output, size and type of other activities integrated with the manufacturing operation, whether or not feed is pelleted and whether it is sold in bulk or bag are some factors affecting the plant production and handling costs.

Overhead costs are affected primarily by the volume of feed manufactured, volume of feeds merchan-

(Turn to USDA STUDY, page 178)

Named President Of Grain Shippers

MINNEAPOLIS—The Minneapolis Grain Shippers Assn. has elected Thomas F. Toohey as its president. Mr. Toohey is merchandising manager of the Farmers Union Grain Terminal Assn., St. Paul.

Thomas F. Toohey

John P. Cole, Cargill, Inc., was elected first vice president and John H. Dunn, Van Dusen Harrington — division of F. H. Peavey & Co., second vice president. Pete Stallcop, secretary, the Northwest Country Elevator Assn., was elected secretary-treasurer. Directors elected to serve with officers for the current year are: A. H. Anders, Central Soya Co., Inc.; Brooks Fields, Burdick Grain Co., and G. E. Whiteman, General Mills, Inc.

The association is interested primarily in matters affecting transportation and marketing of grain and has, as members, individuals representing every facet of the grain trade in the Minneapolis market.

The organization will culminate its year's activities with a golf tournament and dinner at the Edina Country Club, near Minneapolis, on June 6.

Activities Planned By Chicago Feed Club

CHICAGO—Some 61 members and guests attended a recent meeting of the Chicago Feed Club.

Jack Brennan, Abbott Laboratories, chairman of the club's public relations committee, arranged for volunteers from the club's membership to handle the ushering and information service furnished annually by the group for the American Feed Manufacturers Assn. meeting scheduled this year for May 9-11 at the Conrad Hilton Hotel in Chicago.

Final arrangements have been made by Harry Rafferty, Hudson Pulp & Paper Corp., for the annual dinner-dance, to be held this year at the Evanston Golf Club, May 21.

Art Fahrenkrog, Illinois Farm Supply, chairman of the golf committee, announced that Joe Kirkwood, well-known golf pro, will be on hand at the spring golf outing of the club to give golfing tips. The tournament will take place at the Midwest Country Club June 21.

The speaker at the club's meeting was Bill Veeck, owner of the White Sox baseball team.

New members recently admitted in the Chicago Feed Club are: Robert Cosgrove and Don Kincaid, both of Dawe's Laboratories.

Controlling Brucellosis

OTTAWA—More than one fourth of all cattle in Canada have been brought under a national brucellosis control program. The health of animals division, Canada Department of Agriculture, has reported that the program, launched in 1957, now involves about 3 million cattle.

SELLIN' SAM — **By Jim Zilverberg**

"Sam was really a tough competitor on financing deals last year."

April Commodity-Feed Price Ratios Better for U.S. Farmer

WASHINGTON—The relationship of market value of farm chickens, broilers, turkeys, eggs, hogs and milk to feed prices was more favorable for the producer last month than in the same month a year ago. However, hog-corn and broiler-feed ratios were slightly lower in April than in the preceding month.

The U.S. Department of Agriculture reports that during the month ended April 15 the index of prices received by farmers rose nearly 1%. But the index of prices paid by farmers went up, too—nearly 1%. With both prices received and paid up, the parity ratio remained at 80 for April 15, compared with 82 a year earlier.

Continued advances in prices of feeder livestock, combined with higher prices of feed, seed and farm supplies more than offset lower prices of other farm production goods.

USDA says farmers paid about 1% more for feed during the month ended April 15 than they did during the three preceding months. Virtually all important feedstuffs were up. Grains led the advance, and grain by-products and mixed feeds also showed substantial hikes.

The feeder and replacement livestock index rose about 3% during the month, as the result of a 14% increase in prices paid for baby chicks and a 50¢ cwt. increase in feeder cattle prices as the new grazing season began.

POULTRY AND EGGS—In contrast with the usual seasonal decline, egg prices rose more than 11% during the month ended April 15 to average 36¢ doz., 27% above a year earlier. Farm chicken prices advanced 9% to average 13.4¢ lb., but commercial broiler prices were down 2%. Turkey prices advanced 1¢ to average 27.5¢ lb. in mid-April.

The farm chicken-feed price ratio was .3 higher April 15 than it was both a month and a year earlier.

The April, 1960, broiler-feed ratio of 3.8 was off .1 from a month earlier but up .5 from April, 1959.

USDA data shows that the turkey-feed ratio rose .2 to 8.1 from March to April, which was substantially stronger than the 6.5 ratio of a year earlier.

April's egg-feed ratio of 10.6 was .9 better than March's, and 2.4 above the ratio recorded a year before.

MEAT ANIMALS—A 40¢-cwt. rise in the average price of hogs was primarily responsible for a 1% increase in the index of prices received for

(Turn to **RATIOS**, page 177)

Feed: Average Prices Paid by Farmers, U.S., April 15, 1960, With Comparisons

Commodity and unit	Apr. 15, 1959	Mar. 15, 1960	Apr. 15, 1960
	—dollars—		
Alfalfa hay, baled, ton..	29.5	33.5	33.1
Other hay, baled, ton ..	27.3	29.7	29.6
Cottonseed meal, 41%, cwt.	4.26	4.08	4.08
Soybean meal, 44%, cwt.	4.26	4.14	4.16
Bran, cwt.	3.13	2.93	3.05
Middlings, cwt.	3.21	2.98	3.08
Corn meal, cwt.	3.22	3.10	3.13
Scratch grain, cwt.	3.93	3.85	3.89
Laying mash, cwt.	4.52	4.34	4.38
Poultry ration cost, cwt...	3.44	3.34	3.39
Broiler growing mash, cwt.	4.93	4.68	4.69
Turkey growing mash, cwt.	4.90	4.66	4.70
Chick starter mash, cwt.	5.02	4.84	4.87
Mixed dairy feed, under 29% prot., cwt..	3.79	3.70	3.72
Mixed dairy feed, over 29%	4.57	4.47	4.51
Mixed hog feed, 14-18%, cwt.	4.16	4.03	4.08
Mixed hog feed, over 29%, cwt.	5.55	5.26	5.34
Cattle feed, 30% and over	4.52	4.38	4.39
	—Index numbers— (1910-14=100)		
Feed, prices paid by farmers	203	197	199

Farm Commodity-Feed Price Ratios

	U.S.	New Eng.	Mid-Atl.	East North Cent.	West North Cent.	South Atl.	East South Cent.	West South Cent.	Mount.	Pac.
CHICKEN-FEED—										
Farm Chickens:										
April, 1960	4.0	4.7	4.6	4.1	2.8	3.9	3.7	3.2	3.3	2.7
March, 1960	3.7	4.3	4.2	3.6	2.9	3.7	3.7	3.2	3.3	2.5
April, 1959	3.7	3.4	4.2	3.7	3.0	3.6	3.7	3.3	4.0	3.0
Average (1949-58)	5.5									
Average (April, 1949-58) ..	6.0									
Broilers:										
April, 1960	3.8	4.0	4.7	4.2	4.0	3.7	3.5	3.7	3.9	4.1
March, 1960	3.9	3.9	4.8	4.2	4.0	3.8	3.6	3.7	3.9	4.1
April, 1959	3.3	3.4	4.2	3.7	3.5	3.2	3.1	3.1	3.9	3.4
TURKEY-FEED—										
April, 1960	8.1	7.6	9.0	8.3	9.5	7.2	7.6	6.8	8.2	7.5
March, 1960	7.9	7.5	8.8	8.2	9.4	7.2	7.9	7.2	7.9	6.8
April, 1959	6.5	6.6	8.1	6.6	7.0	5.8	7.3	6.1	7.8	6.2
Average (1949-58)	8.4									
Average (April, 1949-58) ..	8.6									
EGG-FEED—										
April, 1960	10.6	14.3	12.1	10.5	10.3	10.9	11.1	9.5	9.9	9.2
March, 1960	9.7	13.6	10.2	9.0	9.4	10.0	11.0	9.2	9.6	8.7
April, 1959	8.2	10.0	8.8	7.8	7.4	9.1	9.0	8.1	8.7	7.7
Average (1949-58)	11.1									
Average (April, 1949-58) ..	10.1									

	U.S.	North Atl.	East North Cent.	West North Cent.	South Atl.	South Cent.	West
MILK-FEED—							
April, 1960	1.35	1.24	1.32	1.45	1.60	1.48	1.31
March, 1960	1.43	1.35	1.38	1.51	1.71	1.60	1.39
April, 1959	1.32	1.23	1.27	1.44	1.69	1.42	1.32
Average (1949-58)	1.30						
Average (April, 1949-58) ..	1.19						
BUTTERFAT-FEED—							
April, 1960	24.1	...	20.0	26.4	...	16.2	18.7
March, 1960	24.5	...	20.3	27.0	...	16.4	19.0
April, 1959	24.6	...	20.2	27.2	...	16.3	18.5
Average (1949-58)	22.2						
Average (April, 1949-58) ..	21.7						

	U.S.	North Cent.
HOG-CORN—		
April, 1960	14.8	15.4
March, 1960	15.1	15.9
April, 1959	13.7	14.1
Average (1949-58)	14.0	14.3
Average (April, 1949-58) ..	13.8	14.2

NOTE: Ratios computed at mid-month by U.S. Department of Agriculture. Ratios represent number of pounds of poultry feed equal in value to 1 lb. live farm chicken, turkey or 1 doz. eggs; pounds broiler growing mash equal to 1 lb. broiler; pounds concentrate rations equal to 1 lb. milk or butterfat; bushels of corn equal to 100 lb. hog. Increases in ratios are favorable to the feeder.

KEY TO GEOGRAPHICAL DIVISIONS

Here is a guide to the states included in the geographical divisions listed in the accompanying commodity-feed price ratios:

New England: Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut.

Mid-Atlantic: New York, New Jersey, Pennsylvania.

North Atlantic: New England and Mid-Atlantic states combined.

East North Central: Ohio, Indiana, Illinois, Michigan, Wisconsin.

West North Central: Minnesota, Iowa, Missouri, North Dakota, South Dakota, Nebraska, Kansas.

North Central: Combination of the two foregoing.

South Atlantic: Delaware, Maryland, Virginia, West Virginia, North Carolina, South Carolina, Georgia, Florida.

East South Central: Kentucky, Tennessee, Alabama, Mississippi.

West South Central: Arkansas, Louisiana, Oklahoma, Texas.

South Central: Combination of the two above.

Pacific: Washington, Oregon, California.

Mountain: Idaho, Wyoming, Colorado, New Mexico, Arizona, Utah, Nevada, Montana.

West: Combination of the two above.

Egg Set for Week Sets New Record

SALISBURY, MD.—Records of all sorts are being broken in the broiler industry.

Hatcherymen in 22 reporting states last week set 53,907,000 eggs. This was 2% above the previous week and 12% above the corresponding week a year ago. This was a record. Last year's high and the previous record set was 51,991,000 eggs on March 21, 1959.

Settings were up from the previous week in 14 of the 22 states. States showing sizable increases included Arkansas, North Carolina, Delaware, Indiana, Georgia and Virginia.

Georgia led the egg set with 10,873,000. This was also a record for that state. Delmarva made another record, setting 5,798,000.

Broiler chick placements in the 22 important broiler producing states totaled 36,650,000. This was 2% above the previous week and 2% above the corresponding week a year ago. Increases were reported for 16 states compared with the previous week. The largest increases occurred in Georgia, Mississippi, Arkansas and Texas.

April was a better month for broiler growers than a year earlier. The average price last month was 17.5¢ compared to 17¢ during April, 1959. This was a 3% improvement. Feed prices averaged $4.70 cwt. or down 3% from a year earlier. However, the price of chicks during April at 12¢ each was 33% above the previous year.

Broiler prices last week in Delmarva averaged 16.68¢ compared with 17.19¢ the week before. A year ago the price was 17.78¢.

FDA Regulation for Oleandomycin Issued

WASHINGTON — The Food and Drug Administration this week issued a food additive regulation dealing with addition of the antibiotic oleandomycin to certain feeds and tolerances for residues in chickens and turkeys.

The action came on a petition submitted by Chas. Pfizer & Co., Inc. It is understood that additional FDA action will be required before the product can be widely marketed for feed use.

The regulation covers use of oleandomycin as an aid in stimulating growth and improving feed efficiency of chickens and turkeys.

The quantities of oleandomycin permitted in the feed for these purposes are: equivalent to the activity of not less than 1 gm. per ton and not more than 2 gm. per ton of oleandomycin activity.

A tolerance of zero was set for residues of the additive in or on the uncooked edible tissues or byproducts of chickens and turkeys.

Honeggers' Will Be Featured on TV Film

FAIRBURY, ILL. — Honeggers' & Co., Inc., is featured in one of a new TV film series, "New Horizons," shown weekly on nearly 90 TV stations from coast to coast.

The program, to have an audience of nearly 20 million, will tell the story of America's growth and progress in terms of the manufacturers who develop and supply the products that are a part of "the American way of life."

In the film on Honeggers', Drew Pearson interviews E. F. Dickey, president, for his story on the growth of the Honegger organization. The Honegger Research Farm, laboratories, feed mills and plants are toured, showing the modern methods used in manufacturing Honegger products.

The film was produced in New York.

Ingredients Continue Downhill Price Roll

Feed ingredient prices continued to roll downhill this week. The U.S. Department of Agriculture said the average decline was $1 ton in the nation's leading markets at the close of the week ended May 3.

Production of most items appeared to be greater than demand could take care of and formula feed sales were reported to be slow in spite of the fact that mid-April egg, hog, corn and cattle prices were better than they were in March.

USDA reported that some traders said there was no interest in covering future requirements but from some markets came reports that demand was improved near the close of the reported week when buyers stepped up purchases, taking advantage of low prices.

New Crop Alfalfa

New crop alfalfa made its appearance this week and the alfalfa meal market reacted with substantial dips in prices, some as much as $5 ton.

The American Dehydrators Assn. said in a bulletin that it looks as though the crop year ended April 30 with total dehy production nearly equal to the record top of 1955-56. ADA observed that, according to USDA figures, it would seem that there were 30,600 tons more of dehy on hand March 31 this year than a year earlier.

ADA further noted that dehy disappearance in February and March totaled 19,100 tons more for those months in 1960 than in 1959—and a continuation of the trend could lead to "pretty narrow margins of inventory" as the new alfalfa crop makes its entry.

Oilseed Meals Dull

Oilseed meal markets were dull. Slow demand was noted for both soybean and linseed meal. Dealers said no interest was shown in the forward months and only limited demand was shown for nearby.

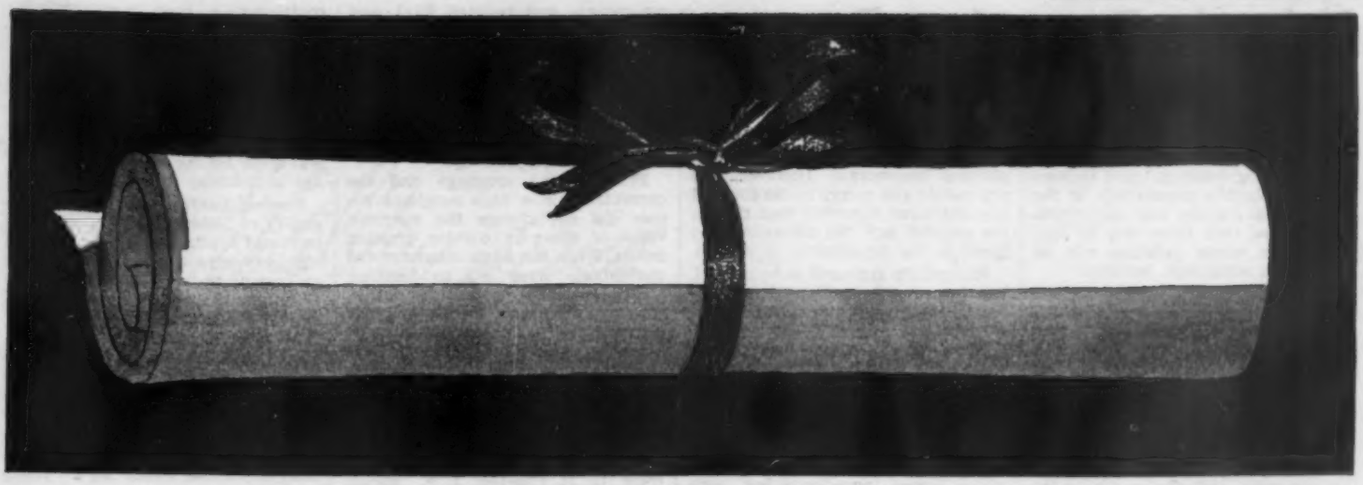
The soybean meal market appeared

(Turn to **INGREDIENTS**, page 177)

Average Bulk Prices and Index of Weighted Prices*
(Dollars per ton)

	May 3, 1960	Apr. 26, 1960	Change from previous week
OILSEED MEALS			
Prices at prin. mkts.:			
Soybean meal	63.60	63.70	— .10
Cottonseed meal	59.60	60.65	—1.05
Linseed meal	68.75	69.00	— .25
Copra cake or meal..	70.50	71.50	—1.00
Peanut meal	50.50	50.50	...
Index	82.0	82.5	— .5
ANIMAL PROTEIN FEEDS			
Prices at prin. mkts.:			
Meat meal	75.05	77.60	—2.55
Tankage	73.10	76.50	—3.40
Fish meal	98.25	98.25	...
Index	69.1	70.8	—1.7
GRAIN HIGH-PROTEIN FEEDS			
Prices at prin. mkts.:			
Gluten feed and meal	45.60	48.00	—2.40
Dist. dried grains ..	61.75	63.20	—1.45
Brewers dried grains	41.00	41.85	— .85
Index	71.8	75.0	—3.2
WHEAT MILLFEEDS			
Prices at prin. mkts.:			
Bran	36.90	38.50	—1.60
Midds. and shorts	37.70	39.90	—2.20
Index	67.4	70.8	—3.4
OTHER MILLFEEDS			
Prices at prin. mkts.:			
Hominy feed	43.85	45.05	—1.20
Rice bran	30.00	29.00	+1.00
Index	66.9	68.1	—1.2
ALFALFA MEAL			
Prices at prin. mkts..	54.80	56.45	—1.65
Index	105.5	108.6	—3.1
MOLASSES, FEEDING			
Prices at prin. mkts..	20.52	20.52	...
Index	61.1	61.1	...
ALL FEEDSTUFFS			
Index	75.9	77.3	—1.4
FEED GRAINS			
Prices at prin. mkts.:			
Corn	41.20	41.40	— .20
Oats	49.20	48.60	+ .60
Barley	41.60	41.50	+ .10
Grain sorghums	37.60	38.50	— .90
Index	67.2	67.4	— .2

*Base period of index is 1947-49.
Source: Agricultural Marketing Service, USDA.



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Nebraska Researchers Report On Pellets, Additives for Cattle

LINCOLN, NEB. — "Don't expect pelleted feeds to revolutionize the cattle feeding industry," said University of Nebraska researchers at the 48th annual Feeders Day conference. They added that there will be specific cases where pelleting can be used to an advantage, however.

Some other topics discussed at the conference included the use of enzymes, effect of feeding interval on winter and summer gains, the use of hormones and feed additives for fattening cattle, tranquilizers for calves and a comparison of suncured and dehydrated alfalfa.

Regarding the use of pellets, a feeding project was started at the Lincoln experiment station during the fall of 1958. The first experiment was conducted to study the effects of pelleted rations versus chopped rations on the digestibility and efficiency of feed utilization when fed to growing and finishing steers.

The test was carried on in two phases, a growing and a finishing phase. The growing trial consisted of 16 head of Hereford steer calves fed individually for 140 days. There were four rations in the test: (1) chopped hay-ground concentrate, (2) chopped hay-pelleted concentrate, (3) pelleted hay-ground concentrate, and (4) pelleted hay-pelleted concentrate. Calves were hand-fed twice daily.

No difference was found in the digestibility of dry matter, protein and energy between the ground and pelleted concentrate. However, the dry matter and energy in the chopped hay was more digestible than that in the pelleted hay. No difference was found in the digestibility of protein.

Rumination appeared to be normal, but the calves fed pelleted hay ruminated less. Feed required per 100 lb. of gain was 905, 969, 905 and 914 respectively, for rations 1, 2, 3 and 4. Average daily gains, in respective order, were 1.41, 1.32, 1.41 and 1.40.

The finishing trial consisted of 16 yearling steers fed individually for 161 days. Rations fed were the same as those fed during the growing phase (same ingredients but with different proportions).

In this trial, significant differences in digestibility were found due to the form in which both the hay and the concentrate were fed. The dry matter, protein and energy in the chopped hay were more digestible than that in the pelleted hay. The pelleted concentrate was more digestible than the ground concentrate for dry matter, protein and energy.

The combination of the ground concentrates and pelleted hay resulted in much lower digestion coefficients for ration 3. Daily gains were lowest with this ration, too. After slaughter, it was found that two of the four steers on ration 3 (ground concentrate and pelleted hay) had abscessed reticulums.

No difference in the rate of gain was noted for steers on the other rations. Feed required per 100 lb. gain was 775, 887, 1,133 and 927 lb. for the rations 1, 2, 3 and 4 in that order. Average daily gains were 2.12, 2.02, 1.57 and 1.98 respectively.

Pelleting the roughage and the concentrate in a high roughage ration did not change the nutritive value of the ration for growing calves. When this same roughage and concentrate were fed to finishing steers on a high concentrate ration, there was an undesirable effect in pelleting the roughage and a desirable effect due to pelleting the concentrate.

The desirable effect associated with pelleting the concentrate may be due to an increase in palatability, say Nebraska scientists.

The three men supervising the tests, D. C. Clanton, J. K. Matsushima and W. E. Peden, Jr., have drawn these conclusions on pelleting: Pelleting of high roughage rations has possibilities in livestock feeding. Changing the physical form of forages makes it possible for livestock to eat more, and gain more.

Increased gains are not attributable to pelleting, but to increased intake. Pelleting of low quality roughage improves the palatability.

Cellulose digestibility is greatly decreased when forage is pelleted. This is due in part to faster passage of the forage through the digestive system. The decrease in cellulose digestion is reflected in a decrease in digestible energy. With pelleted roughage, there is less energy lost in the work of digestion and metabolism. So net energy is about the same for pelleted and chopped roughages.

The pelleting of high concentrate rations does not produce beneficial effects. Livestock will not eat as much nor will they gain as well. Some research shows that a ration containing a low concentrate-to-roughage ratio when pelleted will produce as much gain and as efficiently as an unpelleted ration containing a high concentrate to roughage ratio.

No difference was observed in the carcass characteristics. So pelleting will allow for the use of more roughage in finishing rations.

Feeding Enzymes—In another University of Nebraska test, steer gains increased approximately 9% and feed efficiency improved almost 12% when an enzyme preparation was added to a fattening ration consisting of ground shell corn and alfalfa hay.

However, the amylolytic and proteolytic enzyme preparation had no benefit when added to the same basal ration that was supplemented with 0.65 lb. of soybean oil meal per day.

These observations came from a 154-day feeding test including 24 head of yearling steers. All the steers were fed individually in separate bunks.

The enzyme preparation was a commercial product derived from a microbiological fermentation process and primarily a starch digesting enzyme. The preparation also contained some enzymes that digest protein. The product hadn't been approved for beef cattle feeding when the report was prepared.

There was no increase in the digestibility of nutrients observed from the addition of the enzyme preparation when soybean oil meal was added or excluded from the ration.

Effect of feeding interval on winter, summer gains—This trial was started to study the effect of frequency of feeding hay to calves during the winter on their winter gains and subsequent summer gains.

The results failed to show any marked differences in winter gains and subsequent summer gain in beef calves fed an average of 4 lb. of alfalfa hay per day with feed inter-

(Turn to NEBRASKA, page 168)

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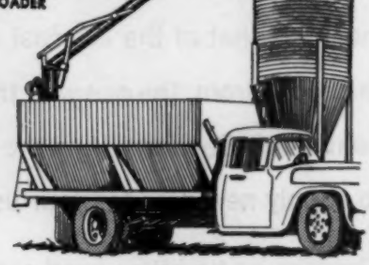

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Value of Reserpine in Poultry Production Reported at Session

By GEORGE L. GATES
Editor of Feedstuffs

ST. PAUL, MINN.—Poultry specialists from all over the U.S. met here May 6 at the University of Minnesota Institute of Agriculture for an all-day conference on the use of the tranquilizing drug, reserpine, in poultry production.

Highlighted at this second tranquilizer conference sponsored by CIBA Pharmaceutical Products, Inc., Summit, N.J., was the finding that reserpine, well known as a drug which lowers human blood pressure effectively controls—and in many cases prevents—aortic rupture in turkeys when added to their feed.

The conference discussions attracted considerable interest because outbreaks of fatal aortic rupture, which often wipes out more than 10% of a flock, have been on the increase in the Midwest and in the South.

In addition to several papers presented on the use of reserpine in preventing or treating aortic rupture in turkeys, poultry scientists discussed studies which have involved the testing of reserpine as an agent for relieving various environmental stresses in poultry flocks and as an aid to otherwise promoting poultry growth and production.

The chairman of the conference, Dr. Elton L. Johnson, head of the department of poultry husbandry at the University of Minnesota, introduced the speakers and moderated the panel discussion which closed the conference.

Reserpine Described

Dr. George B. Belloff, CIBA senior research veterinarian, led off the conference with a brief discussion of the stress ameliorating characteristics of reserpine in poultry husbandry and, at the same time, reviewed some of the more recent developments in the field.

Dr. Belloff explained that reserpine is a compound which buffers an animal against an adverse environmental influence. It is a tranquilizer with hypotensive activity; it lowers blood pressure.

Chemically, reserpine is an indole alkaloid, he said. It was first isolated from the roots of the Indian snakeroot plant, Rauwolfia serpentina, by a CIBA research team headed by Dr. Emil Schlittler. Serpasil, CIBA's reserpine, was first introduced by the firm in 1953.

Dr. Belloff reported that a review of studies conducted with poultry indicates that reserpine exerts a protective activity in heat stress, crowding, vaccination and social order adjustment, as well as being useful in controlling aortic rupture in turkeys because of its blood pressure-lowering and anti-stress properties.

Summaries of Reports

Summaries of reports on the value of reserpine in poultry production presented by scientists during the conference follow:

Reserpine in the Control of Aortic Rupture in Growing Turkeys—Reporting on studies conducted at Clemson College in South Carolina, Dr. B. D. Barnett, head of the school's poultry department, revealed that when reserpine was given to one flock of aortic rupture-prone turkeys, a loss of 10 birds occurred on the first day of medication, but on the second day the mortality dropped to 6, and on the third day to 1. No losses were experienced after the fourth day.

In another trial involving 8,500 turkeys, Dr. Barnett noted that ".5 mg./lb. (reserpine) stopped mortality the first day of treatment and deaths did not recur when the drug level was reduced." Mortality in the untreated flock continued unchecked.

He noted that since the turkey has unusually high blood pressure, it is suspected that this condition is important in the final rupture of the damaged artery.

"Two possible solutions are suggested for a reduction of aortic rupture," he said. "First, the cause of degeneration of the artery wall might be determined. Second, the turkey's blood pressure might be reduced to such an extent that rupture is prevented even though some degeneration of the artery wall had begun."

Dr. Barnett said considerable effort has been directed toward the first alternative with the suggestion that anticoagulants, high levels of dietary fat, fish meal or vitamin B_6 might increase the rate of artificially-induced hemorrhage.

The hypotensive activity of reserpine suggested that it might reduce mortality by the second route mentioned by Dr. Barnett. He reported

(Turn to RESERPINE, page 165)

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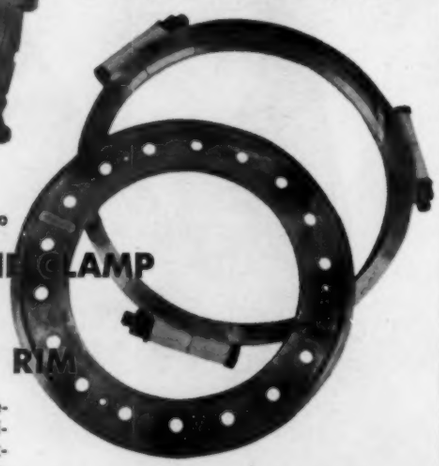

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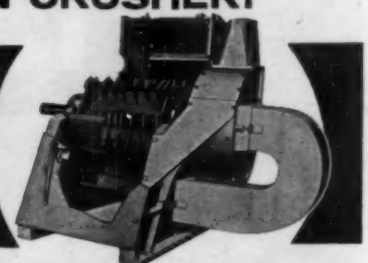

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Feed for Thought

ADDENDUM, VITAMIN A

In a recent column (Beef and Vitamin A, Feedstuffs, March 5, 1960, page 14) we described the work of Dr. A. L. Neumann, reported at the recent Illinois Nutrition Conference in which beef cattle on rations considered adequate in carotene developed symptoms of vitamin A deficiency. Since then, Dr. Neumann has added further comments on the problem (A Puzzling Problem for Cattle Feeders, Feedstuffs, April 23, 1960, page 58). This later report points out the symptoms which manifest themselves in the afflicted animals and refers to the manner in which corn is grown in the Corn Belt as a possible cause for the problem. Apparently, University of Illinois agronomists believe that the resultant shading in dense strands of high yielding corn may be responsible for nitrate accumulation in the corn. It is known that nitrates interfere with conversion of carotene to vitamin A and this could be responsible for the problem.

Dr. Neumann indicated that most afflicted animals responded to vitamin A, either injected or added to the ration. Dr. Neumann recommends, "As of now, fortification of cattle rations with vitamin A or possibly its precursors seems the best protection against this condition, especially when heavy silage feeding is in practice. The level of fortification to use is an open question, but a fortification level at least equal to or slightly above NRC levels, as given for true vitamin A, would be good insurance." Your best insurance is Peter Hand Stabilized A, available in a wide variety of potencies for economical protection against vitamin A deficiencies.

J. R. LINSNER
Director of Technical Services
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Look for "Feed for Thought" every month. This popular column appears regularly in this same place (page 14) in the first Feedstuffs issue of each month.

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Jacobson Celebrates 50th Anniversary

MINNEAPOLIS — Fifty years of growth and service to the feed industry are being celebrated this year by Jacobson Machine Works, Inc., and the company's golden anniversary was the theme of a sales meeting held April 25-26 in Minneapolis.

Twenty-six representatives from many parts of the U.S. and Canada were on hand to help observe the firm's anniversary and at the same time to obtain service and sales information on the latest developments in the complete line of Jacobson hammermills and other equipment.

A. E. Jacobson Machine Works was founded in Minneapolis in 1910 by Axel E. Jacobson. The first several years were devoted to repairing and improving feed grinders for local milling firms. Subsequently, in a small machine shop, the first Jacobson hammermills were produced. From this humble origin, an anniversary booklet points out, Jacobson Machine Works, Inc., has grown into an organization with national representatives and sales throughout the world. Operation of the company continues under the direction of Howard and Ralph Jacobson, sons of the founder.

The anniversary booklet tells of the basic ideas and patented design features developed by Axel Jacobson, outlines continuing research and product development, lists Jacobson "firsts" in grinding equipment and points out applications of hammermills and supplemental items for "lowest cost per ton." Engineering, production, quality control, service and sales personnel and facilities to serve the growing feed industry also receive special attention.

In addition to hammermills, the company's line has grown to include other equipment items for feed and cereal mills.

Highlights of the recent two-day sales conference at the Francis Drake Hotel included introduction of a number of new items, a complete tour of the Jacobson factory and distribution of the 50th anniversary booklet. Jack Hayhoe conducted the meetings, with presentations by other staff members and representatives of companies supplying components of Jacobson equipment. Representatives from the various areas told of the varied feeding problems in the different areas.

In connection with its anniversary observance, Jacobson Machine Works conducted a survey on the current status of the first 100 Jacobson "Universal" hammermills. Manufacture of these hammermills began in 1929, and many of them, it was shown, have operated continuously for more than 30 years.

The survey revealed that as of December, 1959, 81 of the mills were still in daily operation, one burned in a mill fire and two no longer were operating. The status of 16 was undetermined. Letters were written to the last known owners of these hammermills, but replies were not received. It is considered possible that some have changed owners a number of times and are still in operation.

ANNIVERSARY MEETING—Representatives and home office personnel of Jacobson Machine Works, Inc., gathered for this picture during the firm's Golden Anniversary sales meeting in Minneapolis.

Front row, left to right (all from the home office): Bill Wisik, Chris Mol, Bob Olson, Howard C. Jacobson, Ralph M. Jacobson, Jack Hayhoe, Harry Stone.

Middle row: Bill Arnold, West Allis, Wis.; Will Donaghy, Minneapolis; Andy Baardson, Portland, Ore.; H. N. Vredenburg, Muncy, Pa.; Bob Williams, Kenmore, N.Y.; Ed Beatty, Sidney, Ohio; Bill Rose, Galesburg, Ill.; Charles J. Sekyra, Sidney, Ohio; Les Griepentrog, Watertown, Wis.; Wm. Beverly Moore, Kansas City; Jack Miller, Waterloo, Iowa; C. J. (Abe) Pelstra, Winimac, Ind.; Ted Morse, Council Bluffs, Iowa; Horace Krause, Watertown, Wis.; Adrian Sivinski, Omaha, Neb.; Fred B. Walters, Streator, Ill.

Top row: Harold A. Peterson, Watertown, Wis.; George A. Blackwell, Winnipeg, Canada; Charles Schick, Winnipeg; Art Hain, Watertown, Wis.; Al Orsund, Pelican Rapids, Minn.; Bob Hampel, Forest City, Iowa; E. P. Segelstrom, Denver, Colo.; Jack H. Brewer, Taylorville, Ill.; Henry H. Stark, Oklahoma City; Don Nielsen, Omaha, Neb.

GFDNA, Senate Group To Talk Storage May 17

WASHINGTON—Sen. Stuart Symington (Dem., Mo.), chairman of the Senate Agricultural Subcommittee investigating Commodity Credit Corp. operations, has set May 17 as the date when representatives of the Grain & Feed Dealers National Assn. will appear before the subcommittee to present industry views on the CCC storage situation.

A recent GFDNA newsletter said a staff officer of GFDNA met April 4 with Richard Schmidt, Jr., counsel for the subcommittee and the national association accepted at that time the invitation to appear before the subcommittee, but a commitment as to a definite date was not given to GFDNA by Sen. Symington until late in April.

Promotion Man Named

NEW YORK — Appointment of C. Lee Hill as product promotion manager for Union Bag-Camp Paper Corp. bag sales division has been announced by Gene W. Donaldson, director of advertising and sales promotion.

Before joining Union Camp in 1959, Mr. Hill was director of merchandising for the Gardner Division of Diamond National Corp.

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Superior Announces Portable Pelleter

HOPKINS, MINN.—A new portable feed pelleter, described as "meeting the need for intermediate equipment in making pellets," has been announced by the Superior Co., Hopkins, manufacturer of grain-feed-seed processing equipment.

"The machine has a production capacity of up to 750 lb. per hour, yet the cost is reasonable and it does not require steamers, mixers and feeders," said H. A. Pyzdrowski, manager of the company. "The cold cubing principle is used to produce pellets from dry meal mixtures—without steam. However, in areas where basic ingredients are likely to have an extremely low moisture content, the equipment can be fitted with a cold water drip-feed assembly to supply the binder needed.

"The unit is truly portable. Three men can pick it up, move it inside a building or load it into a pick-up truck. Many feed mills are likely to use it as a supplemental machine for short orders."

The machine is driven by a 7½ h.p. direct coupled motor which can be plugged into a standard 220 volt farm or industrial power outlet. Height is 5 ft., 9 in., and weight is 750 lb. Cost of the basic machine is listed at $1,385, f.o.b. Hopkins.

In normal production, said Mr. Pyzdrowski, the machine can be fitted with a simple hopper for hand feeding, or it can be installed under an overhead gravity bin for volume feeding. A feed metering device is part of the pelleter and can be set at the desired capacity.

The company said the machine will produce pellets from screenings, whether ground or whole. It was noted, however, that the machine is designed for ground materials; hay, for example, must be first reduced by a hammermill.

Seven sizes of dies are available, ranging from 3/32 to ⅝ in. Die ring life expectancy was reported to be 350 to 750 tons, depending on type of ingredients.

The machine was developed originally by the Templewood-Hawksley group, an English manufacturer whose experience includes production of dry pelleting equipment and allied feed and farm machinery. The Superior Co. said it has exclusive marketing rights in the U.S. and Canada. The machine is called the Superior-Templewood Portable Pelletizer. Servicing and rehabilitation will be done in the U.S. by Superior and in Canada by Northland Machinery Supply Co., Ft. William, Ont.

Superior-Templewood Portable Pelletizer

The company said tests showed a full day's operation of the machine would produce enough pellets to feed: 40 milk cows for one week; or 45 beef cattle for a week; or 2,500 laying hens for a week; or 150 hogs for a week (average weight 200 lb.). Average cost for this pelleting, including power cost, maintanence, depreciation and labor was said to be under $3 per ton.

Equipment to Mexico

CHICAGO—The Seedburo Equipment Co. recently made four large shipments of grain testing and grading equipment to the Republic of Mexico, according to Rex Yocum, president.

Purchased by an agency of the Mexican government, the order covers equipment for more than 400 Mexican installations. Principal item included in the shipment was the Seedburo Steinlite 500-RC moisture tester.

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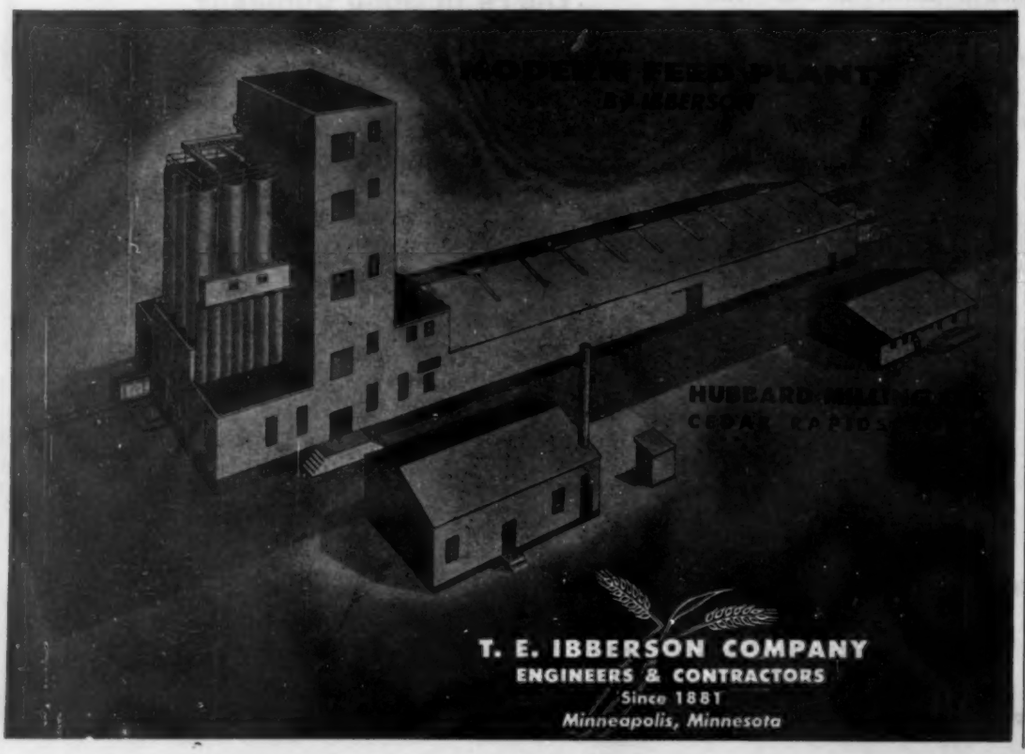

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A Method for Calculating the Methionine Requirement Of the Laying Hen

Described Is a Method for Calculating the Methionine Requirement of the Laying Hen as Influenced by Body Size, Rate of Gain, Rate of Egg Production, Egg Size, Season and Energy Content of Ration. Author's Data Indicate Appreciable "Over-Consumption" of Feed Energy and Withdrawal of Body Protein in Order to Maintain Egg Production When a Ration Sub-Optimal in Amino Acids Is Fed.

By Dr. Gerald F. Combs
University of Maryland

Perhaps no field of poultry nutrition research appears to be yielding such contrasting data as have the studies on protein requirements of the laying hen. These requirements have normally been expressed as percentage of total ration with little consideration given to the many factors which are known to influence caloric needs and feed intake, and/or the requirement for protein and amino acids.

Graham (1) noted that laying hens selected diets containing 12-15% protein with an average of 12.9% when they were fed free-choice protein concentrate, corn and oats. Other workers (2-4) have also reported 12.5-13% protein levels as adequate for layers. However, some (5-7) have reported that levels of 17-18% protein are needed for optimum results. Heuser (8) reported that 16% dietary protein was optimum for layers and he improved laying rations by reducing the fiber content (9). Hill et al (10), using rations containing widely different energy levels, observed that 5-lb. Leghorn hens maintained good egg production on 15% protein while 4-lb. Leghorns housed in heated rooms required between 15 and 16.5% protein.

One well might be reminded of Leonardo da Vinci (1452-1519 A.D.), an early Italian scientist who believed that "the results of an experiment are never wrong—only our interpretations!" In this light, consideration should be given to some of the factors which could be expected to influence the apparent protein or amino acid requirements for maintenance and egg production. Some of these are: (1) Protein quality of the ration, (2) energy density, (3) total energy intake in relation to protein intake, (4) egg production level, (5) egg size, (6) condition of birds at start, (7) change in body composition and body weight, (8) length of experimental period and depletion, (9) amount of exercise, (10) ambient temperature or season and (11) differences in absorption and utilization of nutrients.

It appears that the critical requirement of the laying hen for protein is somewhat difficult to determine because of her apparent ability to compensate to some extent for sub-optimal dietary levels of essential nutrients. If the hen responds as the growing chick, it can be postulated that an amino acid or protein deficiency would result in over-consumption of the diet; and consequently, greater energy intake and a change in carcass composition would occur before egg production would be greatly affected.

In support of this theory, older birds have been found to need higher protein levels than do pullets (11). Also, Clark et al (12) fed two groups of growing pullets 13.5 and 18.5% protein rations, respectively. These groups were then divided and the same protein levels were used during the laying period. The use of the high protein level during the growing or laying period produced superior egg production over the low protein ration fed through both periods.

TABLE 1. Summary of 1958-59 University of Maryland Hen Data Where Protein, Methionine and Lysine Levels Were Varied (0-46 wks., S.C.W. Leghorn Pullets)

Observations	Percent Protein 15.3	12.7	10.9	10.9 plus amino acids*
Methionine level, %	0.262	0.230	0.204	0.264
Lysine level, %	0.951	0.567	0.414	0.49
Cal. Met. Energy/lb.	1392	1417	1430	1430
Gms. Methionine/Therm ME	0.85	0.74	0.65	0.77
Gms. Lysine/Therm ME	2.45	1.81	1.30	1.55
Lysine/methionine ratio†	2.88	2.47	2.03	2.01
Initial weight, gm.	1660	1673	1665	1660
Weight change, gm. (0-46 wk.)	+156	+62	—13	+27
Mortality, % (0-46 wks.)	16.5	25.0	41.5	22.0
Av. Egg Production, % (0-46 wks.)	69.0	62.6	54.3	58.4
Feed/doz. eggs	4.34	5.14	5.87	5.79
Carcass analysis (at end of study)				
Moisture, %	60.0	62.0	62.4	....
Protein, %	17.3	17.8	17.6	....
Fat, %	17.5	15.0	14.4	....

* 0.04% DL-Methionine added throughout and .076% L-lysine (.1% L-lysine HCl) added during 12-46 week period. This is calculated to be comparable to an unsupplemented ration containing approximately 12.3% protein.

† Methionine first limiting when lysine/methionine ratio is greater than 2.09; lysine more limiting than methionine when this ratio is less than 2.09 based on ratio found in the egg.

Gerald F. Combs

AUTHOR—Dr. Gerald F. Combs is nutrition professor in the department of poultry husbandry at the University of Maryland, where he has been engaged in nutrition research since 1948. Dr. Combs obtained his B.S. degree from the University of Illinois in 1940, served as a nutrition officer in the army from 1941 to 1946, then was awarded his Ph.D. degree in animal nutrition from Cornell University in 1948. In 1953 he received the American Feed Manufacturers Assn. award for poultry nutrition research. This significant article is Miscellaneous Publication No. 384, Contribution No. 3132, of the Maryland Agricultural Experiment Station (Department of Poultry Husbandry).

Certainly, one would expect inconsistencies if requirements are expressed as percent of the ration with feeds varying appreciably in energy potency. A protein-energy relationship affecting the rate of production has been observed (7, 14). Hens fed a low energy 14% protein diet supported a rate of lay comparable to that of hens fed a high energy ration containing 18% protein (13). Similarly, protein quality would obviously influence protein needs. Perhaps the excellent egg production reported by Miller et al (3) on relatively wide calorie-protein ratios may be explained in part by the excellent quality of the protein (fish meal or supplemental amino acids) and short experimental period.

In addition to energy potency of the feed, ambient temperature is known to influence feed intake. At temperatures between 70° and 90° F. (night and day, respectively), an 18% protein diet was required (12); however, another report (14) concluded 15% dietary protein adequate during moderate to hot weather.

It is necessary to determine the factors which influence these requirements and to quantitate their effects, rather than consider a single percent value appropriate for expressing the amino acid or protein requirement of laying hens.

1958-1959 MARYLAND HEN STUDY (conducted by D. F. Middendorf, G. F. Combs and N. V. Helbacka)—This hen study, described by Middendorf and Helbacka (15) and Combs (16), included 32 pens of 24 White Leghorn pullets each. One fourth of these or eight pens were maintained during a 46-week experimental period on simplified corn-soybean meal type rations containing 10.9, 12.7 or 15.3% protein by assay. A fourth series of eight pens received the lowest protein levels supplemented with 0.04% DL-methionine and 0.1% L-lysine hydrochloride. The average results for the 46-week experimental period are given in Table 1.

By subsequent calculations, methionine is believed to be the first limiting amino acid in the rations containing 15.3% or 12.7% protein. However, in the

TABLE 2. Summary of Protein Level Data Together with Actual Methionine Intakes and Calculated Requirements (1958-59 Md. Hen Exp.)*

% Prot. in feed	Wks. of trial	% egg prod.	Av. egg size, gm.	Gm. egg/ hen/ day	Av. daily gain, gm.	Av. body weight, gm.	Lb. feed/ lb. eggs	Grams feed per hen per day: Actually eaten	Calc. req.†	Dif., %	Mgs. methionine per hen per day: Actually eaten	Calc. req.‡	Dif., %	Mgs. meth. consumed 100 gm. eggs§	Ratio feed to egg meth.
15.3	0-12	80.4	57.9	46.6	1.02	1703	2.32	109.4	112.5	— 2.5	287	324	—11.4	608	1.48
12.7	0-12	73.0	56.8	41.3	0.56	1697	2.67	110.1	103.8	+ 6.1	253	295	—14.2	614	1.50
10.9	0-12	59.2	56.6	33.5	—0.25	1655	3.15	105.4	93.3	+13.0	215	249	—13.7	643	1.67
15.3	12-24	73.4	60.4	44.3	0.31	1759	2.73	120.8	117.8	+ 2.5	317	312	+ 1.6	715	1.74
12.7	12-24	64.9	60.2	39.1	0.35	1735	3.36	131.1	109.1	+20.2	302	284	+ 6.3	773	1.89
10.9	12-24	58.0	60.0	34.8	0.65	1672	3.82	133.0	102.9	+29.3	271	262	+ 3.4	779	1.90
15.3	24-36	63.6	63.0	40.1	0.40	1789	2.87	115.0	107.5	+ 7.0	301	292	+ 3.1	752	1.83
12.7	24-36	59.1	62.8	37.1	0.57	1773	3.66	135.9	103.0	+31.2	313	278	+12.6	842	2.05
10.9	24-36	51.9	62.6	32.5	0.35	1714	4.07	132.3	95.7	+38.2	270	250	+ 8.0	830	2.02
15.3	36-46	52.8	63.0	33.3	0.14	1811	3.15	104.5	96.3	+ 8.5	275	258	+ 6.6	825	2.01
12.7	36-46	46.4	62.8	29.1	—0.89	1766	3.51	102.2	87.1	+17.3	235	229	+ 2.2	807	1.97
10.9	36-46	40.3	62.6	25.2	—0.53	1672	4.17	105.3	81.5	+29.2	215	207	+ 3.7	851	2.08

* Each treatment composed of eight pens of 24 S.C.W. Leghorn pullets.
† From Byerly's equation (17) corrected for temperature and energy level of feed (18, 19).
‡ By method described herein (note apparent depletion during first 12 weeks).
§ 100 gm. of egg solids contain approximately 410 mlg. of methionine.

TABLE 3. Estimated Methionine Requirement for Maintenance, Body Weight Change and Egg Production by Hens

Purpose for Maintenance†	Gm. Meth./ Therm P. E.	Gm. Meth./ Therm M.E.	% Meth. Reference feed*
3 lb. hen	0.57	0.39	0.116%
4 lb. hen	0.64	0.46	0.130%
5 lb. hen	0.69	0.48	0.140%
6 lb. hen	0.73	0.51	0.148%
7 lb. hen	0.77	0.54	0.156%
8 lb. hen	0.81	0.57	0.164%
9 lb. hen	0.84	0.59	0.170%
For weight change‡	2.70	1.89	0.55 %
For egg prod.§	2.17	1.52	0.44 %

* Reference feed contains 920 Calories of productive energy or 1315 Calories Metabolizable Energy per pound. Feed consumption based on data of Byerly (17) uncorrected for season.
† Based on requirement of 50 mg. methionine per kg. of body weight.
‡ Based on requirement of 6.2 mg. methionine per gm. of body weight.
§ Based on requirement of 5.0 mg. of methionine per gram of egg solids.

TABLE 5. Calculation Methionine Requirement for Laying Hens*
(Per Cent of Ration)

Season	GRAMS EGG PER HEN PER DAY 57	52	47	42
	——920 Calories of Productive Energy Per Pound†——			
Summer	.295	.288	.281§	.272
Fall	.286	.280§	.273	.263
Spring	.280§	.274	.267	.258
Winter	.265	.259	.252	.244
	——1000 Calories of Productive Energy Per Pound‡——			
Summer	.321	.313	.305	.295
Fall	.311	.304	.297	.286
Winter	.288	.282	.274	.265
Spring	.304	.298	.290	.280

* 4 lb. hens, gaining 1 gm. per hen per day.
† 1315 Calories of metabolizable energy per pound.
‡ 1425 Calories of metabolizable energy per pound.
§ NRC requirement is .28%.

10.9% protein ration, both lysine and methionine are considered to be limited to approximately the same extent. By calculation, valine would be the third limiting amino acid, but it is considered adequate in all of these rations in relation to the levels of methionine and lysine supplied.

Carcass analysis of 16 birds from each protein level failed to reveal any increase in body fat of the low protein fed hens at the end of the study (Table 1). This is true in spite of the fact that these hens consumed considerably more feed per pound of eggs, and failed to gain in body weight. The question arises as to whether the low protein diet resulted in sufficient restriction of digestive enzymes to account for this difference. Calculations given in Table 2 reveal that the feed consumption exceeded that which was predicted by as much as 38% when the low protein feed was fed. This overconsumption without increased body fats suggests a decrease in digestion and absorption and/or utilization when the low-protein ration was fed.

A striking increase in mortality was observed as the protein level was reduced. This is not attributed entirely to increased feather picking since the pullets were debeaked. Egg production progressively increased and feed per dozen eggs decreased as the protein level was raised.

More detailed results by periods are given in Table 2. It is obvious that the differences in egg production, as a result of protein level, persisted during each of the periods. A plot of the data failed to indicate that the highest level of protein provided during any of these periods was excessive, since the points fall on a straight line. In fact, it is considered probable that the 15.3% protein diet failed to supply sufficient protein to meet the optimum requirements for heavy production.

It appeared possible from the data given in Table 2 to calculate (1) the daily energy requirement per hen and (2) the daily methionine requirement per hen and (3) to relate one to the other directly or express the methionine needs as percent of a feed with specified energy level. This can be done with these data for methionine only, since it was the limiting amino acid. After obtaining satisfactory information about methionine, then one could project requirements for the other amino acids as suggested by Fisher (20) on the basis of their relative occurrence in the egg.

To do this, a discussion of the calculations of feed intake, according to the Byerly equation (17), and subsequent correction for energy content and season (18, 19) are presented. Following this, the calculation of the methionine requirement from the data given in Table 4 is discussed.

FEED INTAKE OR ENERGY INTAKE CALCULATIONS—Byerly's equation (17) for estimating feed intake for layers is as follows:

$$F=0.523W0.653\pm1.126\Delta W+1.135E$$

Where F=feed consumption in grams/hen/day,
W=average body weight in grams,
ΔW=average daily body weight in grams,
and E=grams of egg product/hen/day.
(Note: The feed, F, contained 920 Calories of productive energy or 1,315 Calories of metabolizable energy per pound, and no consideration is made for temperature differences.)

Hill (19) described the following equation for computing relative efficiency of rations differing in energy content:

E=11.3+0.96 x, where x = Calories of productive energy per pound of feed and E=relative efficiency. Relative efficiency is defined as predicted feed consumption ÷ observed feed consumption x 100.

In the calculations of the present paper predicted feed consumption from the Byerly equation is converted directly into Calories of either productive or metabolizable energy, so that Hill's equation for computing relative efficiency was not required. Hill (18) also has observed differences in relative efficiency with the same feeds during different seasons of the year as compared with that predicted by the Byerly equation (17). Hill has suggested average relative efficiencies as follows:

Season	Av. Relative Efficiency	Conv. Factor*
Fall	102%	0.98
Winter	95%	1.05
Spring	100%	1.00
Summer	106%	0.94

* The conversion factor is merely the reciprocal of relative efficiency (as defined above). To apply, simply multiply the calculated feed or Calorie intake by the conversion factor.

METHIONINE REQUIREMENT CALCULATIONS — The following equation was devised to express the total methionine needs of the laying hen:

$$M=aW\pm b\Delta W+cE$$

Where M=methionine requirement in milligrams per hen per day,
W=average body weight in grams,
ΔW=average daily change in body weight in grams,
E=average grams of egg product/hen/day,
and a, b and c are undetermined finite values.

Data from the University of Maryland 1958-59 hen study, given in Table 2 was used as the basis of forming several such equations. Since the first 12-week period involved an apparent depletion, only the 12-24, 24-36 and 36-48 week periods were used. Furthermore, the amount of weight change was so small that factor "b" could not be satisfactorily determined from the equation. Hence, a factor of 6.2 mg. of methionine per gram of tissue gain or loss was used. (This assumes 5.25 mgm. methionine per gram of body weight and a digestibility coefficient of 85%.)

Accordingly, the nine equations were simplified by removing the bΔW term. These were then adjusted to 1,750 gm. body weight and plotted.

The regression equation (E=0.1752M-13.67), indicated a maintenance requirement of 45 mg. of methionine per kg. body weight and 5.7 mg. of methionine per gram of egg product. If one of the nine equations (which differed most from the others) were eliminated, then the regression equation (E=0.197M-19.24) yielded a maintenance requirement of 56.5 mg. of methionine per kilogram body weight and 5.06 mg. per gram of egg produced. A regression line based only on 0-12 week data indicated a requirement of 4.76 mg. of methionine per gram of egg product and only 33 mg. of methionine per kilogram of body weight for maintenance.

In view of these results, values of 5 mg. of dietary methionine per gram of egg produced and 50 mg. of methionine per kilogram of body weight have been used for maintenance in subsequent calculation. The resulting equation is as follows:

$$M=0.05W\pm6.2\Delta W+5E.$$

Where M=methionine requirement in mg./hen/day,
W=average body weight in grams,
ΔW=average body weight change in grams/hen/day,

TABLE 4. Reference Table for Calculation of Energy and Methionine Requirements of Laying Hens (University of Maryland, 1960)

Av. gm. of egg per hen/ day†	Required for Egg Production (Amt. per hen per day) Cal. P.E.	Cal. M.E.	Mgm. methionine	Gm. Reference Feed*	Av. Gm. daily change in body weight	Required (±) for change in Body Weight (Amt. per hen per day) Cal. P.E.	Cal. M.E.	Mgm. methionine	Gm. Reference Feed*	Required for Maintenance (Amt. per hen per day) Average Body Lb.	Weight Gm.	Cal. P.E.	Cal. M.E.	Mgm. Methionine	Gm. Reference Feed*
18	41.4	59.2	90	20.4	−1.0	−2.3	−3.3	−6.2	−1.1	2.50	1134	104.8	149.7	56.7	51.7
19	43.7	62.5	95	21.6	−0.9	−2.1	−2.9	−5.6	−1.0	2.75	1248	111.5	159.4	62.4	55.0
20	46.0	65.8	100	22.7	−0.8	−1.8	−2.6	−5.0	−0.9	3.00	1361	118.0	168.7	68.1	58.2
21	48.3	69.1	105	23.8	−0.7	−1.6	−2.3	−4.3	−0.8	3.25	1475	124.4	177.8	73.8	61.3
22	50.6	72.4	110	25.0	−0.6	−1.4	−2.0	−3.7	−0.7	3.50	1588	130.5	186.6	79.4	64.4
23	52.9	75.7	115	26.1	−0.5	−1.1	−1.6	−3.1	−0.6	3.75	1701	136.5	195.1	85.1	67.3
24	55.2	79.0	120	27.2	−0.4	−0.9	−1.3	−2.5	−0.5	4.00	1815	142.4	203.6	90.8	70.2
25	57.5	82.2	125	28.4	−0.3	−0.7	−1.0	−1.9	−0.3	4.25	1928	148.2	211.8	96.4	73.1
26	59.8	85.5	130	29.5	−0.2	−0.5	−0.7	−1.2	−0.2	4.50	2042	153.8	219.9	102.1	75.9
27	62.1	88.8	135	30.1	−0.1	−0.2	−0.3	−0.6	−0.1	4.75	2155	159.2	227.6	107.8	78.5
28	64.4	92.1	140	31.8	0.0	0.0	0.0	0.0	0.0	5.00	2269	164.8	235.5	113.5	81.3
29	66.7	95.4	145	32.9	0.1	0.2	0.3	0.6	0.1	5.25	2382	170.1	243.1	119.1	83.9
30	69.0	98.7	150	34.1	0.2	0.5	0.7	1.2	0.2	5.50	2495	175.3	250.6	124.8	86.5
31	71.3	102.0	155	35.2	0.3	0.7	1.0	1.9	0.3	5.75	2609	180.5	258.0	130.4	89.0
32	73.6	105.3	160	36.3	0.4	0.9	1.3	2.5	0.5	6.00	2722	185.6	265.3	136.1	91.5
33	76.0	108.6	165	37.5	0.5	1.1	1.6	3.1	0.6	6.25	2836	190.6	272.5	141.8	94.0
34	78.3	111.8	170	38.6	0.6	1.4	2.0	3.7	0.7	6.50	2949	195.5	279.5	147.5	96.4
35	80.6	115.1	175	39.7	0.7	1.6	2.3	4.3	0.8	6.75	3062	200.4	286.4	153.1	98.8
36	82.9	118.4	180	40.9	0.8	1.8	2.6	5.0	0.9	7.00	3176	205.2	293.3	158.8	101.2
37	85.2	121.7	185	42.0	0.9	2.1	2.9	5.6	1.0	7.25	3289	210.0	300.1	164.5	103.6
38	87.5	125.0	190	43.1	1.0	2.3	3.3	6.2	1.1	7.50	3403	214.7	306.9	170.2	105.9
39	89.8	128.3	195	44.3	1.1	2.5	3.6	6.8	1.2	7.75	3516	219.3	313.6	175.8	108.2
40	92.1	131.6	200	45.4	1.2	2.7	3.9	7.4	1.4	8.00	3630	224.0	320.1	181.5	110.5
41	94.4	134.9	205	46.5	1.3	3.0	4.2	8.1	1.5	8.25	3742	228.5	326.6	187.2	112.7
42	96.7	138.2	210	47.7	1.4	3.2	4.6	8.7	1.6	8.50	3856	233.0	333.2	192.8	114.9
43	99.0	141.5	215	48.9	1.5	3.4	4.9	9.3	1.7	8.75	3970	237.6	340.0	198.5	117.2
44	101.3	144.7	220	49.9	1.6	3.7	5.2	9.9	1.8	9.00	4083	241.9	345.7	204.2	118.3
45	103.6	148.0	225	51.1	1.7	3.9	5.5	10.5	1.9						
46	105.9	151.3	230	52.2	1.8	4.1	5.9	11.1	2.0						
47	108.2	154.6	235	53.4	1.9	4.3	6.2	12.7	2.1						
48	110.5	157.9	240	54.5	2.0	4.6	6.5	12.4	2.3						
49	112.8	161.2	245	55.6	2.1	4.8	6.9	13.0	2.4						
50	115.1	164.5	250	56.8	2.2	5.0	7.2	13.6	2.5						
51	117.4	167.8	255	57.9	2.3	5.3	7.5	14.2	2.6						
52	120.0	171.1	260	59.0	2.4	5.5	7.8	14.9	2.7						
53	122.0	174.4	265	60.2	2.5	5.7	8.2	15.5	2.8						
54	124.3	177.6	270	61.3	2.6	5.9	8.5	16.1	2.9						
55	126.6	180.9	275	62.4	2.7	6.2	8.8	16.7	3.0						
56	128.9	184.2	280	63.6	2.8	6.4	9.1	17.4	3.2						
57	131.2	187.5	285	64.9	2.9	6.6	9.5	18.0	3.3						
58	133.5	190.8	290	65.8	3.0	6.8	9.8	18.6	3.4						
59	135.8	194.1	295	67.0											

* Reference feed contains 920 cal. PE/lb. or 1315 Cal. ME/lb.
† Av. gms. of eggs per hen per day=(% prod.) x (egg size in grams).

TABLE 6. Calculated Methionine and Lysine Requirements for Laying Hens Under Different Conditions of Temperature, Daily Gain, Body Size, Egg Production and Energy Density of Ration.

Specific Consideration					Methionine Requirement			Lysine Requirement		
Body Wt., Lb.	Av. Daily Gain, Gm.	Gm. Eggs/ Hen/ Day	Season Summer or Winter	Cal. P. E/ Lb. of Feed*	Cal. % Meth. Req. in Feed	Gm. Meth/ Therm PE	Gm. Meth/ Therm ME	Cal. % Lysine Req. in Feed	Gm. Lysine/ Therm PE	Gm. Lysine/ Therm ME
4	+1.5	57	W	900	0.265	1.32	0.92	0.554	2.76	1.93
4	..	57	W	900	0.259	1.30	0.91	0.541	2.34	1.92
4	1.5	27	W	900	0.213	1.07	0.75	0.445	2.24	1.57
4	..	27	W	900	0.208	1.05	0.74	0.435	2.20	1.54
4	1.5	57	S	900	0.293	1.47	1.03	0.612	3.07	2.15
4	..	57	S	900	0.289	1.46	1.02	0.604	3.06	2.14
4	1.5	27	S	900	0.238	1.20	0.84	0.479	2.51	1.76
4	..	27	S	900	0.232	1.17	0.82	0.485	2.44	1.71
7	1.5	57	W	900	0.251	1.27	0.89	0.525	2.66	1.86
7	..	57	W	900	0.249	1.25	0.88	0.520	2.61	1.83
7	1.5	27	W	900	0.211	1.06	0.74	0.441	2.21	1.55
7	..	27	W	900	0.207	1.04	0.73	0.433	2.17	1.52
7	1.5	57	S	900	0.288	1.41	0.99	0.585	2.94	2.06
7	..	57	S	900	0.277	1.40	0.98	0.579	2.93	2.05
7	1.5	27	S	900	0.235	1.19	0.83	0.491	2.48	1.74
7	..	27	S	900	0.231	1.16	0.81	0.483	2.43	1.70
4	1.5	57	W	1050	0.306	1.32	0.92	0.640	2.76	1.93
4	..	57	W	1050	0.302	1.30	0.91	0.631	2.74	1.92
4	1.5	27	W	1050	0.249	1.07	0.75	0.520	2.24	1.57
4	..	27	W	1050	0.243	1.05	0.74	0.508	2.20	1.54
4	1.5	57	S	1050	0.341	1.47	1.03	0.713	3.07	2.15
4	..	57	S	1050	0.337	1.46	1.02	0.704	3.06	2.14
4	1.5	27	S	1050	0.277	1.20	0.84	0.579	2.51	1.76
4	..	27	S	1050	0.271	1.17	0.82	0.566	2.44	1.71
7	1.5	57	W	1050	0.293	1.27	0.89	0.612	2.66	1.86
7	..	57	W	1050	0.290	1.25	0.88	0.606	2.61	1.83
7	1.5	27	W	1050	0.246	1.06	0.74	0.514	2.21	1.55
7	..	27	W	1050	0.242	1.04	0.73	0.506	2.17	1.52
7	1.5	57	S	1050	0.327	1.41	0.99	0.683	2.94	2.06
7	..	57	S	1050	0.324	1.40	0.98	0.677	2.93	2.05
7	1.5	27	S	1050	0.275	1.19	0.83	0.575	2.48	1.74
7	..	27	S	1050	0.270	1.16	0.81	0.564	2.43	1.70

* 900 Calories of productive energy is equivalent to 1285 Calories of metabolizable energy per pound; 1050 Calories of Productive Energy is equivalent to 1500 Calories of metabolizable energy per pound.

and E=average gm. egg product/hen/day.

The estimated requirements for maintenance, egg production and weight change are given in Tables 3 and 4.

Obviously, it becomes apparent readily that the requirement for methionine can be expected to vary considerably, when expressed as percent of ration with differing size of bird, season of year, egg production level, egg size, energy content of feed, etc. However, this may be determined as follows:

$$\frac{0.2204\ (\text{Calories/lb. of feed})\ (\text{Mg. meth. req./hen/day})}{1000\ (\text{Calories required/hen/day})\ (\text{Temp. conv. factor})} = \%\ \text{methionine required in feed}$$

Once the required percent of methionine is determined, the approximate levels of the other essential amino acids required may be computed by applying appropriate conversion factors based on the relative amounts of each present in the egg (20). The amino acid content of the egg is based on data of Block and Weiss (21).

This estimate should be satisfactory since most of the protein of a high producing hen is used for egg production. Accordingly, a method is given which will permit one to compute the requirement for methionine and then to calculate the amounts of other essential amino acids:

Method for Calculating the Approximate Requirement of Essential Amino Acids for Laying Hens, Expressed as % of Total Ration

Step I. Specific Consideration:

1. Av. body weight lb. ..... or gm. .....
2. Av. daily change in body weight, gm. .....
3. Av. egg production, % .....
4. Av. egg size, gm. .....
5. Av. grams egg product/hen/day .....
6. Winter ( ) Spring ( ) Fall ( ) Summer ( )
7. Calories of productive energy/lb. feed ..... (a) or
   Calories of metabolizable energy/lb. feed ..... (a)

Step II. From reference table No. 4 compute the requirements for Calories (uncorrected for temperature) and methionine as follows:

Amount required daily for:	Cal. /hen/day[1]	Mg. Meth. / hen/day
Maintenance	.....	.....
Egg production	.....	.....
Change in body weight	.....	.....
Total	.....(b)	.....(c)

Step III. Correct (b) for seasonal (temperature) differences:

.....(b) x 1.05 (Winter) / 1.00 (Spring) / 0.98 (Fall) / 0.94 (Summer) (Use only one) = ...(d) or Calories corrected for temp. per hen per day

Step IV. Then calculate grams of methionine required per Therm of energy, thus:

$$\frac{\text{Milligrams of methionine required per hen per day (c)}}{\text{Calories required per hen per day (d)}} = \text{.....(e) or grams of methionine required per Therm of dietary energy}$$

Step V. Then the ratio of % methionine/1,000 Calories per pound is calculated as follows:

Grams methionine per Therm of energy in feed or (e) X 0.2204=(f) or % methionine/Therm of energy per lb.

Step VI. And the actual percentage required in a feed of specific energy content is found by multiplying:

$$(f) \times \frac{\text{Calories per lb.}}{1000} = \%\ \text{methionine required}$$

Step VII. Then compute the approximate requirements[1] of the other essential amino acids as follows:

Amino Acid	Conv. Factor[2]		(From above) Cal. % Meth. or grams methionine required/Therm		Calculated % or grams of amino acid required per Therm, resp.
Methionine	1.0	X	.....	=	.....
Methionine + cystine	1.70	X	.....	=	.....
Histidine	0.73	X	.....	=	.....
Isoleucine	2.09	X	.....	=	.....
Leucine	2.85	X	.....	=	.....
Lysine	2.09	X	.....	=	.....
Phenylalanine	1.76	X	.....	=	.....
Phenylalanine + tyrosine	3.00	X	.....	=	.....
Tryptophan	0.49	X	.....	=	.....
Threonine	1.52	X	.....	=	.....
Valine	2.24	X	.....	=	.....

[1] If productive (or metabolizable) energy is selected, use the same basis throughout these calculations.

[2] Conversion factors based on relative amounts of the different amino acids found in egg protein.

COMPARISON OF ACTUAL INTAKES AND CALCULATED REQUIREMENTS—Comparisons of actual intakes and calculated requirements for total feed and methionine (based on the above method) are shown in Table 2. The increase in feed intake in relation to the calculated need is very striking as the protein level is reduced and as the experimental period is lengthened. This apparent over-consumption of feed energy is considered to

TABLE 7. Nutrient Levels and Ratios for Several Simplified Corn-Soybean Meal (Dehulled) Rations for Layers.

Level in ration, %*					Methionine level			Lysine level			
Corn	Dehulled Soybean Meal	% Protein	Calories Met. Energy Per lb.	Calories M.E./lb. % Prot. Ratio	%	% Therms M.E. per pound	Gm./ Therms M.E.	%	% Therms/ M.E./lb.	Gm./ Therm M.E.	Lysine/ Meth. Ratio
82	8	11.9	1450	122.	0.211	0.146	0.660	0.447	0.308	1.40	2.12
81	9	12.3	1445	117.	0.216	0.150	0.678	0.477	0.330	1.50	2.21
80	10	12.7	1440	113.	0.221	0.153	0.696	0.508	0.353	1.60	2.30
79	11	13.2	1435	109.	0.226	0.157	0.715	0.538	0.375	1.70	2.38
78	12	13.6	1430	105.	0.232	0.162	0.736	0.569	0.398	1.81	2.45
77	13	14.0	1425	102.	0.237	0.166	0.755	0.599	0.420	1.91	2.53
76	14	14.4	1420	98.	0.242	0.170	0.773	0.630	0.444	2.01	2.60
75	15	14.8	1416	95.	0.247	0.173	0.791	0.660	0.466	2.12	2.67
74	16	15.3	1411	92.	0.253	0.179	0.813	0.691	0.490	2.22	2.73
73	17	15.7	1406	90.	0.258	0.184	0.833	0.721	0.513	2.33	2.79
72	18	16.1	1401	87.	0.263	0.188	0.852	0.752	0.537	2.44	2.86
71	19	16.5	1396	85.	0.268	0.192	0.871	0.782	0.560	2.54	2.92
70	20	16.9	1391	82.	0.273	0.196	0.891	0.813	0.585	2.65	2.98
69	21	17.4	1386	80.	0.279	0.201	0.913	0.843	0.608	2.76	3.02
68	22	17.8	1381	78.	0.284	0.206	0.933	0.874	0.633	2.87	3.08
67	23	18.2	1376	76.	0.289	0.210	0.953	0.904	0.657	2.98	3.13
66	24	18.6	1371	74.	0.294	0.214	0.973	0.935	0.682	3.09	3.18
65	25	19.0	1367	72.	0.299	0.219	0.992	0.965	0.704	3.20	3.23
64	26	19.5	1362	70.	0.305	0.224	1.016	0.996	0.731	3.32	3.27
63	27	19.9	1357	68.	0.310	0.228	1.036	1.026	0.756	3.43	3.31
62	28	20.3	1352	67.	0.315	0.233	1.057	1.057	0.782	3.55	3.36
61	29	20.7	1347	65.	0.320	0.238	1.078	1.087	0.807	3.66	3.40
60	30	21.1	1342	63.	0.325	0.242	1.099	1.118	0.844	3.83	3.44

* The remaining 10% of ration consists of 2.5% dehydrated alfalfa meal, 1% stabilized fat, and 6.5% minerals, including salt, calcium, phosphorus and trace mineral sources.

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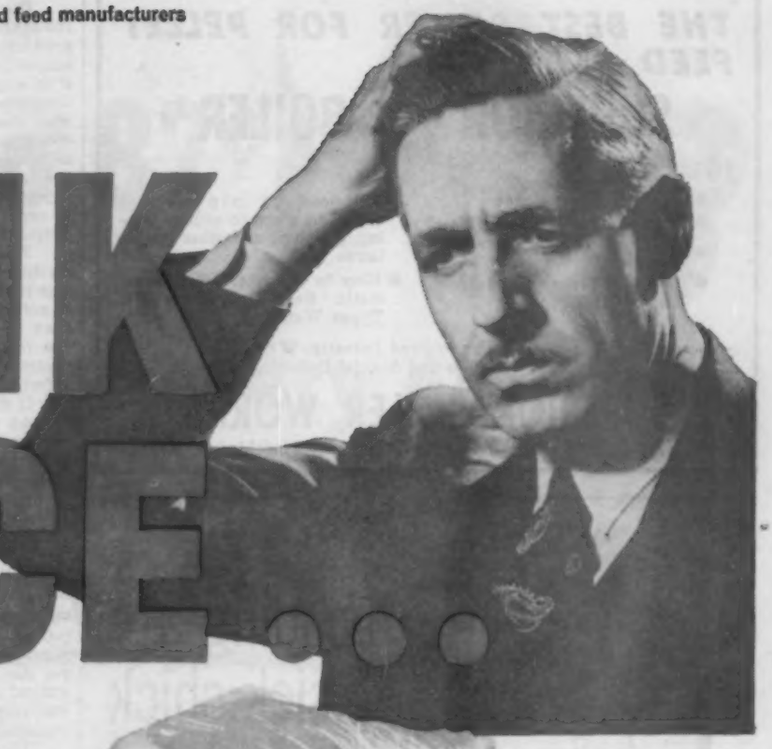

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be a direct result of the sub-optimal level of methionine (or methionine and lysine).

The calculated methionine intake per 100 gm. of egg product was remarkably similar for groups of hens producing at the same rate of egg production after the first 12-week period. If one compares the methionine intake per 100 gm. of egg product during the first 12-week period, however, it is appreciably lower. Since the egg production rate is similar in these comparisons, the relative requirement for maintenance per 100 gm. of eggs also should be similar and the difference would reflect withdrawal of methionine from the body of the hen. If one compares the methionine intake as calculated by this method, there appears to be a marked difference between the first 12-week period and subsequent three periods. This is as one would expect if protein depletion occurs during the early period of high production in order to support a level of egg production beyond that which could be supported by the dietary intake alone.

This discrepancy in actual intake and calculated requirement for methionine by the present method amounted to from 11.4 to 14.2% less during this first 12-week period. (See Table 2.) If one assumes that the requirement is sufficiently low, so that depletion is unnecessary during this first period, then the actual intakes after 12 weeks would be considerably in excess of the requirements. This would be exceedingly difficult to explain since the protein level (methionine or methionine and lysine) clearly exerted an effect on egg production throughout the entire 46-week period.

It would appear that the laying hen has considerable ability to lay beyond the level of production supported by the ration during the first few weeks of production. The data presented in Table 2 indicates that this is accomplished by: (1) Depletion of body reserves and (2) over-consumption of the ration. It would follow that studies designed to determine the protein or amino acid requirements of the laying hen should extend well beyond 12 weeks in duration; in fact, one might better consider the data which is obtained only after the first 12 weeks of heavy lay.

Of course, protein depletion could be expected to continue over a longer period if the ration is only low in one or more amino acids.

It is estimated from the data shown in Table 2 that the laying pullet withdrew an average of 34-40 mg. of methionine per day from her tissue protein reserves during the first 12-week period. This would amount to approximately 50 gm. of total tissue protein or 0.6 gm. of protein per hen per day. Instead of this early period of high egg production being the most critical one for determining protein requirements, it may actually be one of the very poorest, if egg production alone is to serve as the criteria of performance.

The increased caloric intake resulting from sub-optimal protein levels also suggests that protein or amino acid deficiencies would first be reflected in poorer feed conversion followed by lowered egg production. It seems noteworthy that the lowest level of protein used (10.9%) maintained an average egg production of 58.5% for 24 weeks and 54.3% for 46 weeks by "over-consumption" and withdrawal of body protein for egg production.

COMPARISON WITH NRC METHIONINE REQUIREMENT—The main difference between the present approach in arriving at the methionine requirement for the laying hen, and the single methionine requirement value given by the National Research Council, is that this approach attempts to consider level of egg production, egg size, feed intake as influenced by season or energy content, body weight and amount of weight gained as factors which may influence the requirement. The writer is not suggesting that the committee on nutritional requirements for poultry is not aware of these factors, but to date, a satisfactory means of expressing their relationships has not been attempted.

If one calculates the methionine requirements (using the present method) for a 4-lb. laying hen gaining at the rate of 1 gm. of body weight per hen per day, laying 57, 52, 47 or 42 gm. of egg product per hen per day and fed a ration containing 920 Calories of productive energy per pound—the calculated methionine requirement would be as shown in Table 5.

If the NRC requirement of 0.28% applies to a ration containing 920 Calories of productive energy per pound, then the calculated requirements for the hen just described would be very similar. In fact, according to these calculations, the NRC level would support 100% production during the winter and spring months, 90% production during winter, spring and fall and 80% production during all seasons of the year without over-consumption or withdrawal of body reserve. Since some withdrawal of body protein is probable in most studies involving protein requirements, these are considered to be in excellent agreement and lend considerable support to the adequacy of the NRC methionine requirement for layers. In Table 5, also, is shown the methionine requirements for similar hens receiving a ration 1,000 Calories of productive energy (1425 metabolizable energy per pound). These, of course, are higher when expressed as percent of ration.

The present calculations are based on data on birds reared in floor pen facilities. If caged layers are involved, another correction factor should be imposed to correct for differences in activity and energy requirements.

EXAMPLE CALCULATIONS FOR DIFFERING CONDITIONS—Several different example calculations of requirements for methionine and lysine are given in Table 6. This table includes birds of 4 to 7 lb. body weight, gaining 0 to 1.5 gm. per hen per day, laying either 27 or 57 grams of eggs per hen per day, for summer or winter temperature conditions, and with feeds containing 900 or 1,050 Calories of productive energy per pound. By inspection, using the method described above, one would postulate that from .207 to .341% methionine would be required under these specified conditions. It is not unlikely, therefore, that quite varied reports have appeared in the literature concerning the protein requirements of laying hens. This is only to be expected.

FORMULATION OF RATIONS TO MEET AMINO ACID REQUIREMENTS—After determining the grams of the first limiting amino acid (usually methionine) required per Therm of energy, one can solve the following equation to determine the actual level of soybean meal (51% protein, dehulled) and corn needed in addition to other fixed ingredients (22):

$$\frac{\%\ \text{Methionine}}{\text{Therms of Met. Energy/lb.}} = \frac{\text{Total \% Methionine}}{\text{Total Energy (Therm/lb.)}} =$$

$$\frac{\%\ \text{Methionine from fixed ingredients} + \%\ \text{Methionine from corn} +}{\text{Therms ME supplied per lb. from fixed ingredients} + \text{Therms ME/lb. from corn} +}$$

$$\frac{\%\ \text{Methionine from dehulled soybean meal}}{\text{Therms ME/lb. from soybean meal}}$$

Problem:

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80	13,920	27,840	55,680	111,360	167,040
90	15,660	31,320	62,640	125,280	187,920
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phosphate, .35% salt, 0.1% trace mineral mix and 0.05% special mix totaling 10% of the final feed. This supplies in terms of final feed, 49 Calories of metabolizable energy per pound, 0.007% methionine, 0.023% lysine and 0.45% protein. Hence, the following equation can be formulated, if we wish to make a ration containing 0.204% methionine per Therm of M. E./lb.:

$$0.204 = \frac{0.007+0.18X+0.7(0.9-X)}{0.049+1.6X+1.11(0.9-X)}$$

solving, X = 0.6827 or 68.27% corn
and 90-X = 0.2173 or 21.73% soybean meal (dehulled)

Checking, this ration provides 17.67% protein, 0.282% methionine, 1,382 Calories of metabolizable energy and 0.92 gm. of methionine per 1,000 Calories of metabolizable energy (percent methionine X 453.7 = grams methionine per pound. This divided by 1,000 Calories per pound gives grams per Therm.) Formulas may be prepared in like manner to meet just the lysine requirement (second limiting), with the difference in methionine level and requirement to be added.

For example, according to the ratio of lysine to methionine in the egg (2.09:1) a ration containing 0.282% methionine also should contain a minimum of 0.589% lysine (0.282% x 2.09). The corresponding % lysine/Therm ME ratio would be 0.425. The similar equation to solve for the amount of soybean meal (dehulled) and corn plus the same 10% of fixed ingredients would be:

$$0.425 = \frac{0.0225+0.2X+3.25(0.9-X)}{0.049+1.6X+1.11(0.9-X)}$$

solving, X = 0.768 or 76.8% corn
and 0.9-X = 0.132 or 13.2% soybean meal

This ration would then contain 14.1% protein, 1,424 Calories of metabolizable energy per pound and 0.605% lysine (% lysine/Therm M. E. /lb=0.425) but only 0.238% methionine. Since a ration with 1,424 Calories should contain 0.289% methionine (1.424x0.2034) or (0.605 ÷ 2.09) in order to be equivalent to the one above formulated on the basis of methionine level. Hence, this ration would need 0.051% added methionine to be of similar potential value for layers. The latter ration would be 3% more potent in energy and would contain 3.6% less protein than the one formulated to meet the methionine requirement from natural ingredients.

For convenience, a series of these have been computed with pertinent compositional data. These include the same 10% fixed ingredients as cited above. From this table, one can rapidly select the corn-soybean meal (dehulled) ration which would meet the methionine (or lysine) requirement of layers described in Table 7. If the formula were made to be just adequate in lysine, less protein would be required and by adding the required amount of methionine the results should be the same. Obviously, economics of formulation must dictate the approach to use.

SUMMARY—A method for calculating the requirement of the laying hen for methionine as influenced by body size, rate of gain, rate of egg production, egg size, season and energy content of the ration is described. Data are presented which indicate appreciable "over-consumption" of feed energy and withdrawal of body protein in order to maintain egg production when a ration sub-optimal in protein (amino acids) is fed.

v v

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PAMCO Appoints Sales Representative

OSKALOOSA, IOWA—Announcement of the appointment of Darrel Nay as sales representative for Productive Acres Mfg. Co., has come from the firm's offices in Oskaloosa.

Darrel Nay

Mr. Nay, the announcement said, will represent PAMCO in southern Texas and Louisiana.

PAMCO manufactures hydraulicly driven bulk feed delivery and handling equipment. Installation and distribution points of the firm are located throughout the U.S. and Canada.

BUYS FEED BUSINESS

BUFFALO, MINN.—Leo Mercier has purchased the mobile feed mill business of C. J. Trumbo, Delano, which formerly had been known as Wetter's Mobile Feed Service.

'Turkey Fact Book' Is Now Available

MOUNT MORRIS, ILL.—Copies of the "Turkey Fact Book," prepared in cooperation by the National Turkey Federation and the Poultry and Egg National Board, are now available to representatives of the turkey industry.

This 40-page booklet was prepared for the first time this year to meet the special needs of food editors, publicists and others who speak or write about turkeys. Revisions will be made from time to time to keep the information up-to-date.

Some data contained in the booklet includes history of the turkey, basic varieties of turkeys and their characteristics, processing, grading and inspection, nutritional values, market classifications, basic cookery information, and objectives, purposes and operating procedures of the National Turkey Federation and Poultry and Egg National Board.

Those wishing to obtain a copy may do so by sending 25¢ to the National Turkey Federation, Mount Morris, Ill.

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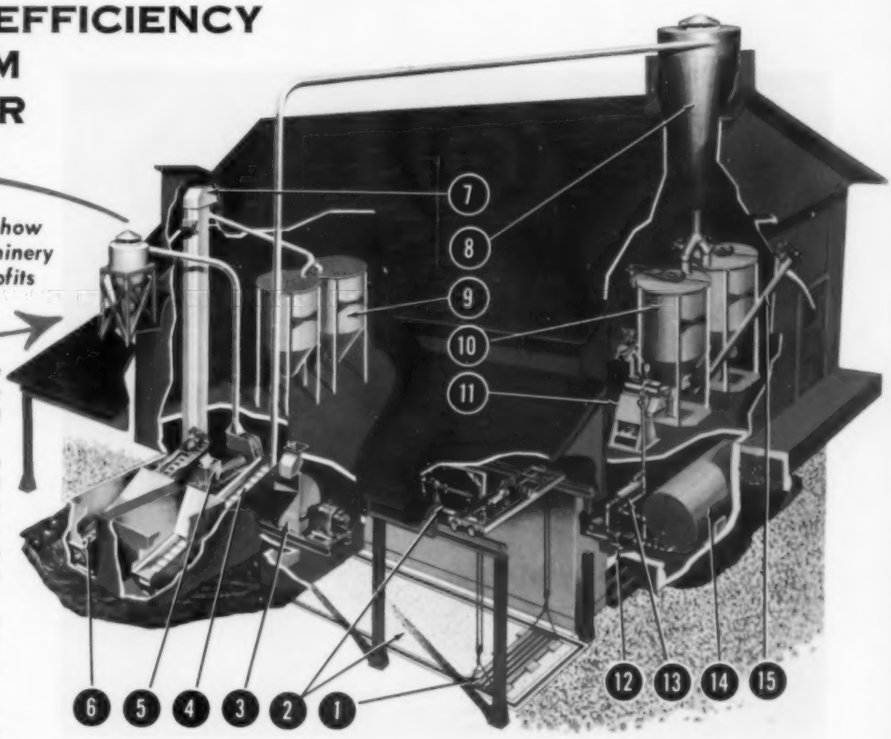

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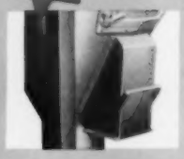

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Who Will Be the Feed Manufacturer Of the Future?

"Manufacturers should not lose sight of the primary reason for the existence of a feed manufacturing industry—to supply quality feed at a lower price than it can be obtained from other sources."

By Oakley M. Ray
Director of Market Research
American Feed Manufacturers Assn.

Oakley M. Ray

AUTHOR—As director of market research for the American Feed Manufacturers Assn., Oakley Ray handles economic and market research activities of the association, interpreting economic facts for release to members, and also coordinates market research activities of the poultry survey committee, feed survey committee and the statistical analysis program. Mr. Ray is an agricultural economics graduate of Purdue University. During 1951-52 he served as a graduate research and teaching assistant while earning his M.S. degree at Purdue. He has attended the University of Chicago and has worked as an extension economist at Purdue. Before joining AFMA, he was assistant director, department of marketing, American Meat Institute.

INDUSTRY OUTPUT TO INCREASE—Formula feed tonnage has increased 40% during the past decade, and the general upward trend is expected to continue. Human population is rising steadily. We are consuming increasing quantities per person of most livestock and poultry products. Charts No. 1, 2 and 3 indicate that per capita consumption of five of six major livestock and poultry products is higher than pre-war (1935-39) averages. The only exception is dairy products. Per capita consumption of beef is more than 40% above pre-war. Per capita consumption of both chicken and turkey has more than doubled.

Formula feed consumption is increasing more rapidly than livestock and poultry numbers (see Chart No. 4). In addition, formula feed consumption is accounting for an increasing share of total feed. There is little doubt that formula feed production will increase substantially in the years ahead.

BUT—WHO WILL BE THE FEED MANUFACTURER?—The important question is, "Who will be the feed manufacturer of the future?" Will tomorrow's formula feed be produced by a uniform expansion of X% in the production of each of today's manufacturers? — or will present manufacturers be replaced by some other group?—or will there be a separate feed industry in the world of tomorrow?

Manufacturers who share in the industry growth are likely to be those who remember that the Number One job of a feed manufacturer is to do the most efficient job possible of producing and distributing feed. Manufacturers who spend 90% of their energy and capital on problems of producing and marketing meat, milk and eggs are not likely to be doing the best possible job in the feed business. They may be successful in over-all operations, but their success is not likely to be based primarily on the feed end of the business.

This is not an attempt to belittle the importance of coordination of the entire food production and marketing chain. It is recognized that some feed manufacturers have been faced with the choice of taking part in "extracurricular" activities or accepting a substantial loss of feed volume. It is also recognized that the prospects of profitable feed operations are slight if feed customers do not have a good market outlet for their end products. The thesis is still advanced that the manufacturer who does a superior job of producing and distributing feed is more likely to have a successful future **in the feed industry** than the one who relegates his feed problems to the "back seat."

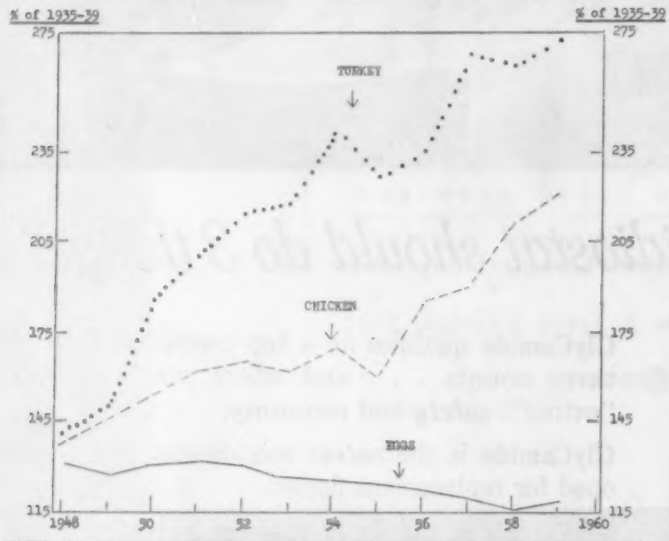
PRODUCERS PROVIDE BASIC COMPETITION — Agricultural producers are the feed industry's customers. Producers also are the industry's most important competition in producing feed. The size of the average farm production unit is continuing to increase. This will intensify the struggle to determine who will produce the increasing feed supplies which will be needed.

Most producers would prefer not to enter the feed manufacturing business—just the same as most feed manufacturers would prefer to operate independently of the producing end. Producers are not likely to enter the feed business in large numbers as long as manufacturers deliver feed to them more efficiently than they can provide it. **Unless manufacturers can provide this service, however, most of tomorrow's farmers will process whatever feed they need. In that event there might be no separate feed manufacturing industry. I am confident that the majority of feed manufacturers can meet the challenge—if they give most of their attention to this one objective.**

The time to take action to meet this threat is now—before additional feed producers have invested in plant and equipment. Simple arithmetic tells us that the owner of a fixed investment maximizes his profit by operating that fixed investment as long as the returns exceed operating costs. This means that he will continue to operate even though his return on fixed investment is only 1 or 2%. A feed mill lasts a long time and a situation like this can mean tough sledding for many years for other mills located in the same market area.

Some manufacturers, of course, have inherent disadvantages which are almost impossible to overcome. A new plant built in an area which already has ample capacity, for instance, can make a difficult situation for competitors as well as for the company owning the plant. Such mistakes can only be avoided by a good plant location research study before determining the location of a new

CHART 1. Changes in Per Capita Consumption of Chicken, Turkey and Eggs

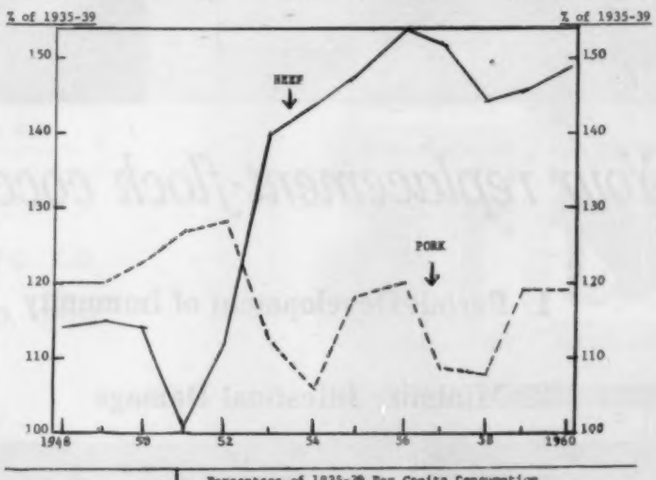


Year	Percentage of 1935-39 Per Capita Consumption		
	Eggs	Chicken	Turkey
1948	130%	137%	141%
1949	128	146	150
1950	130	154	186
1951	131	162	200
1952	130	165	214
1953	126	163	218
1954	125	170	241
1955	124	160	227
1956	123	184	236
1957	119	190	268
1958	116	211	264
1959 1/	118	222	273

Source: Calculated from USDA's Egg & Poultry Statistics Through 1957 and The Poultry & Egg Situation, November, 1959.

1/ Partly estimated

CHART 2. Changes in Per Capita Consumption of Beef and Pork

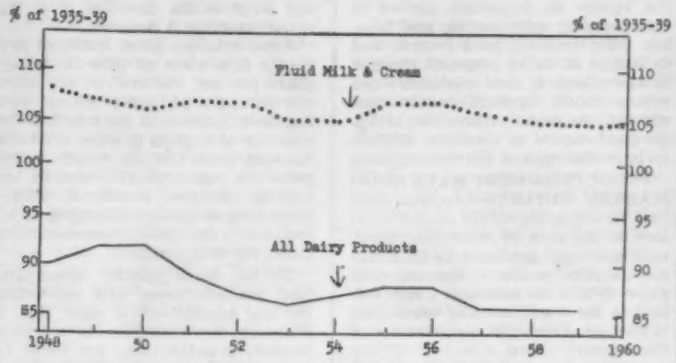


Year	Percentage of 1935-39 Per Capita Consumption	
	Beef	Pork
1948	114%	120%
1949	115	120
1950	114	123
1951	101	127
1952	112	128
1953	140	113
1954	144	106
1955	148	118
1956	134	120
1957	152	109
1958	145	106
1959 1/	146	119
1960 2/	149	119

Source: Calculated from USDA's Livestock & Meat Statistics, 1957 and The Livestock & Meat Situation, November, 1959.

1/ Partly estimated.
2/ Forecast

CHART 3. Changes in Per Capita Consumption of Dairy Products



Year	Percentage of 1935-39 Per Capita Consumption	
	All Dairy Products	Fluid Milk & Cream
1948	90%	108%
1949	92	107
1950	92	106
1951	89	107
1952	87	107
1953	86	105
1954	87	105
1955	88	107
1956	88	107
1957	86	106
1958	86	105
1959 1/	86	105
1960 2/		105

Source: Calculated from three USDA publications: Statistical Bulletin 218 - Dairy Statistics, The Dairy Situation, November 1959 and 1960 forecast from The National Food Situation, February, 1960.

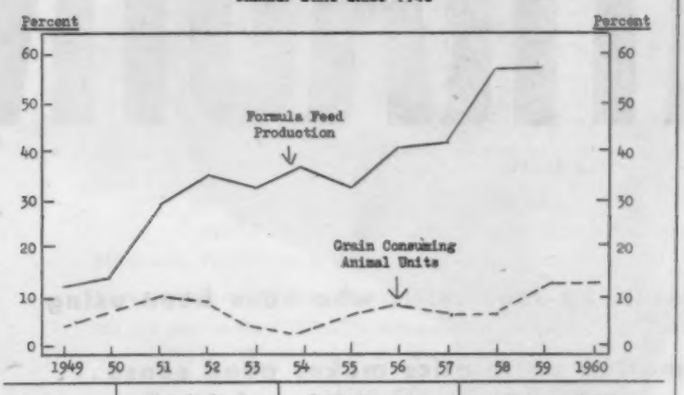
1/ Preliminary
2/ Forecast

mill. Plants located in areas where the demand for manufactured feeds is declining—plants which have high costs of transportation compared with competitors, etc.—may not be able to reach the point where returns to total investment are satisfactory. In some cases all that the company can do is to operate as efficiently as possible under existing conditions, keep accurate records and stand ready to close the mill when returns fall below operating costs.

FEED ONLY ONE LINK IN THE CHAIN—Of course, the feed manufacturer does not automatically prosper by efficient production and distribution of feed. His product still must be sold profitably, which in turn depends to a considerable extent upon the profitable sale of the meat, milk and eggs produced by the feed. Feed plays an important role in the complicated process of producing and marketing food products, but is only one of many ingredients required for success. Weakness on the part of any one of the major links in the over-all producing-marketing process seriously affects the entire chain. Two sections of the chain which seem to be weak at the present time are the producer's sources of capital and parts of the marketing "half" of the chain.

PRODUCERS MUST FIND NEW SOURCES OF CAPITAL—It appears that producers are badly in need of developing some new sources of capi-

CHART 4. Increases in Formula Feed Production and Grain-Consuming Animal Units Since 1948



Year	Formula Feed Production	Grain Consuming Animal Units	All Concentrates Fed 1/
	% Increase Since 1948		
1949	12%	4%	9%
1950	14	7	14
1951	29	10	18
1952	35	9	19
1953	32	4	11
1954	37	3	14
1955	32	6	14
1956	40	8	19
1957	41	6	18
1958	57	6	27
1959 2/	57	12	39
1960 2/		12	42

Source: Formula feed production calculated from monthly reports from AFMA members. Animal units and concentrates fed calculated from two USDA publications--Agricultural Outlook Charts 1959 and The Feed Situation, February, 1960 issue.

1/ Includes Grain.
2/ Forecast

NEW! POSITIVE ACTION VALVE
air operated safety valve eliminates fire hazards . . . no electricity needed . . . low initial cost
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FLOW CONTROL
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• Requires only 15 to 25 lbs. air pressure . . . oil free.
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Never before . . . the sure, safe convenience of Armstrong's FAST POSITIVE ACTION VALVE for flow control of nearly all grain elevator, feed and mill operations. Automatic operation assures dependable overload protection, fast automatic closing if pressure or power fails. Electrically operated if preferred.
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tal. Most farms are still family owned, but have grown so large that it is difficult for families to finance them.

For example, in Indiana the Purdue Farm Management Record summary for 1958 indicated that the average capital investment of several hundred farmers keeping records was more than $90,000. Investments of $200,000 were not uncommon. The average investment of Indiana farmers who take part in the Purdue project is more than twice the 1945-49 average, and more than four times the 1935-39 average (see table below).

Average Capital Investment of Indiana Farmers Keeping Records with Purdue University

Year	Av. Capital Investment
1935-39 Average	$20,000
1945-49 average	42,000
1950-54 average	67,000
1956	80,000
1958	92,000
2000	???

Family-owned farm operations have to be refinanced each generation. In the majority of cases, estates are divided equally among the children. Also, agricultural families average larger than urban families. It is important that only one child take over the farming operation so the physical plant will not be broken into small inefficient pieces. If there are four children and a $100,000 farm, this means a $25,000 inheritance and $75,000 that must be obtained from other sources. This is a serious problem. It will become even more serious as farm size continues to increase.

Feed manufacturers receive many requests to help supply capital to producers. No one, of course, can finance an operation without having some control over his investment. This has been an important reason for the development of some of the vertically integrated arrangements. If agricultural production units must be financed more and more by outside capital, the farm operators will have to be willing to share at least the management policy decisions with those who supply the capital.

WHERE SHOULD MANUFACTURER INVEST?—I will make no effort here to discuss whether this development has been good or bad for agricultural producers and for the feed industry. It does raise the question as to where a manufacturer should invest his limited capital. This is an easy question from the standpoint of theory. You maximize returns to capital by investing in the activity where returns per dollar invested are largest (assuming that for some investments the returns exceed the cost of the capital). If your supply of capital permits, you maximize returns by continuing to invest until you reach the point where returns from additional dollars invested in each area are exactly equal to the cost of the capital to you.

In practice, investment decisions are more difficult. There are interrelations between departments, short-run and long-run variations, fluctuating prices and costs, etc., so that it is difficult to determine the exact return to each investment. Some companies have not been able to secure enough capital to invest to the point where additional investment just returns the cost of the capital. In general, it appears that those who are quite limited on capital should first invest in whatever plant, equipment and personnel are needed for a top-notch feed operation. There may be exceptions where, almost regardless of efficiency, it is not possible to stay in business without extensive investment in integrated operation.

Many manufacturers who are short of capital should investigate carefully the possibility of making increased use of conventional credit facilities to supply the needs of feed customers. Rural banks, P.C.A.'s and others make a business of providing credit for farmers and usually will be interested if the producer's operation is budgeted in detail and if the proposal appears to be sound. If after careful consideration the loan does not appear to be sound for the bank, it may not be sound for the feed manufacturer.

Feed manufacturers and dealers can render an important service to customers by encouraging and helping them to keep good records and to budget in detail proposed changes in operations. If feed customers can secure credit through conventional sources, the manufacturer can utilize company capital to maximize efficiency in producing and distributing feed.

PRODUCERS MUST HAVE GOOD MARKET OUTLETS—Another area that feed manufacturers cannot overlook is the area of marketing meat, milk and eggs produced by feed customers. The producer receives only about 40% of the consumer's food dollar, so the importance of marketing is obvious. Feed bills are paid out of the farmer's share.

A dollar saved in marketing is just as important as one saved in producing. The production end has received so much attention that it is often easier to make a saving on the marketing side. Only recently have many of us begun to realize the importance of marketing and to take at least a few steps in the direction of giving it the attention it deserves.

Some retailers have indicated privately that some of their food suppliers are not "sellers" at all. They cite examples of "order takers" who regularly indicate to the retailers the quantity of a given product available for that week and ask simply "what price are you paying?"—usually accepting whatever is offered. Situations such as this are damaging to all links of the production-marketing chain for that product.

To be more specific concerning feed manufacturers and marketing the end product—it is clear that if producers don't have access to a good marketing outlet, they are likely to be in trouble most of the time and cannot provide a good market for feed. It appears that we have reached the point where each feed manufacturer should have some knowledge of the marketing outlets for his customers' end products. If the farmer

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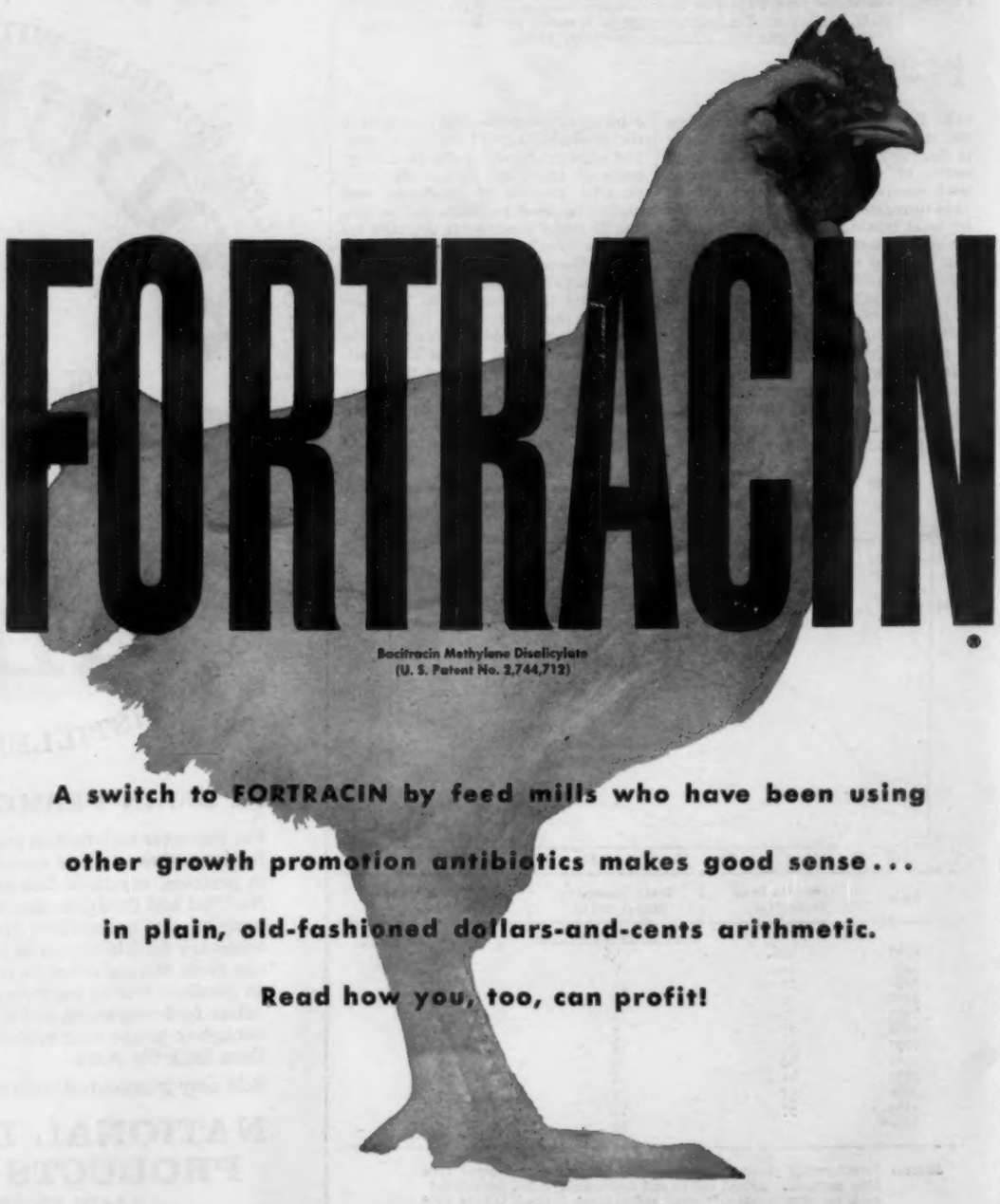

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has good outlets, many manufacturers will prefer to stay out of this type of activity. If a substantial improvement is needed, all links of the production - marketing chain are in danger—including the feed company.

Feed manufacturer participation in marketing may be very limited, or the manufacturer may choose to perform some or all of the actual marketing activities. He has a good possibility of success if he can substantially improve the marketing process without loss of efficiency in his primary feed activity. However, this forces him to become an expert in additional areas. It multiplies his management requirements and often substantially increases capital requirements.

SUMMARY—Formula feed production will increase substantially in the decade ahead. Those interested in specializing in feed manufacturing should expend capital and managerial talent on this one specific area until they are more efficient than most potential new competitors can hope to be.

Additional activities may be required in the area of producing and marketing meat, milk and eggs. Agricultural producers are experiencing increasing difficulty in financing economic-sized units. It appears that traditional methods of agricultural financing are no longer satisfactory. Producers are asking feed manufacturers for financing assistance and for help in developing good market outlets for meat, milk and eggs.

Manufacturers may be able to undertake additional activities but should not lose sight of the primary reason for the existence of a feed manufacturing industry — to supply quality feed at a lower price than it can be obtained from other sources. If the feed manufacturing industry is not able to achieve this objective, there may be no separate feed industry tomorrow — most of the larger farmers will supply their own formula feed requirements.

Feed Management School Set in Canada

GUELPH, CANADA—Preliminary plans for the Feed industry Management School to be held June 6-9 at the Ontario Agricultural College have been announced.

A discussion of the manager's role in the retail feed business will open the program the morning of June 6. This will be followed by talks featuring "Report on Feed Mill Survey in Western Ontario, 1959," by Prof. S. H. Lane, "A Close Look at Ontario Feed Crops for Farming in the '60's," Dr. W. E. Tossell, and "Automation in Feed Production," Dr. W. S. Young. All three speakers are from the host college.

Registrants will tour the crop experiments of the field husbandry department in the afternoon and a panel discussion will be held on "The Current Dilemma of Agriculture — What Can Be Done About It?" in the evening.

The entire daytime program of June 7 will be devoted to "Financial Management and Credit Control." Points to be discussed will be what the feed retailer should know about costs, what the feed retailer should know about pricing his products and techniques for achieving effective control of finances and credit. In the evening, financing farmers, with special reference to the role of the feed dealer, will be discussed.

The June 8 daytime topic will be "Designing and Selecting Physical Facilities for Efficient Operation." Sub-topics to be discussed will be product flow, mill and delivery equipment, designing a new mill and remodeling an old mill. In the evening, registrants will see a film and panel discussion on grain purchasing.

A sales promotion program on June 9 will be given by Ralph Everett, Empire Sales Training, Inc., of Florida, a specialist in feed sales.

A banquet will close out the school the evening of June 9.

The school, sponsored by the college and the Ontario Retail Feed Dealers Assn., is designed specifically for the managers and assistant managers of local feed businesses throughout Ontario and the personnel of the central feed manufacturing companies who work directly with them.

Registration fee has been set as: June 6, 7 or 8, $5 per day; June 9, $10; entire course (June 6-9), $20; banquet, $2. Room and meals at the college residences are available at $3.50 per day.

Further details concerning the program or registration arrangements can be obtained from the department of extension education at Ontario Agricultural College, Guelph.

Salesman for Poultry Laboratories Named

MILLSBORO, DEL.—Roy D. Freeman has been appointed a technical sales representative for Delaware Poultry Laboratories and has been assigned to the Delmarva poultry area, it was announced here by William H. Mitchell, vice president for sales.

R. D. Freeman

Mr. Freeman is a past president of the Delaware Poultry Improvement Assn. Mr. Freeman was associated with Ralston Purina Co. before coming to Delaware Poultry Laboratories. Prior to this, he was a technical sales representative serving the Delmarva area, specializing in poultry biologicals.

Mr. Mitchell said, "Mr Freeman's background and practical knowledge will assist us in expanding our program of developing sound poultry health programs to suit specific needs of our customers."

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We know FORTRACIN is the most economical growth promotion antibiotic available. We want you to know it, too . . . so we'll pay you to prove it to yourself! Penick will pay . . . substantially and in cash . . . for reports on results on flocks fed FORTRACIN-containing diets. All we require is a simple transcript of routine records you already keep. Use the coupon below to get full details.

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We provide FORTRACIN in concentrations of 10, 25 and 100 gram activity per pound.

If you prefer a pre-mix, we can recommend suppliers of FORTRACIN formulations.

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It is this specialized knowledge, combined with the engineering knowledge of the characteristics of air movement in grain, that has made the Douglas Aeration System the best performing, most practically priced system on the market.

Every Douglas Aeration system is custom-fitted to your exact specifications — and delivered at pre-fabricated prices! It costs you less than ordinary special built equipment because the entire system is made up of standardized components, pre-engineered for your application. Motors, fans and ducts of various sizes are interchangeable to fit specific storage facilities.

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Egg Production Tied To Laying Interval In Alabama Tests

AUBURN, ALA.—Researchers at the Alabama Agricultural Experiment Station are exploring the possibility of breeding laying hens on the basis of interval length from ovulation to lay. Hens with shorter interval lengths will have a higher production rate.

"Average time lapse between eggs is reported to be 26 hours. But, some hens require 32 hours, and others only 23 hours," report the scientists.

Since egg formation is somewhat of a continuous process, the hen taking 28 hours to package her product should produce 12.5% more eggs in a given period than a hen requiring 32 hours.

In the test, interval lengths were determined on 400 hens. These lengths were based on all eggs laid in a 6-week period.

From these determinations, 40 hens each with the shortest and longest intervals were selected as foundation breeders. The two groups were used to establish short- and long-interval populations of 200 hens each. This made it possible to evaluate effects of interval length on egg production, body weight, egg size and hatchability. Major differences in these characteristics over generations could be attributed to the effect of interval length selection.

The first generation of the short-interval group had 0.8 hour shorter interval than the foundation stock. But by the second generation, interval difference was 2 hours. Both generations out-performed the parent stock in egg production with an average of 12 and 22 more eggs per hen per season.

Average egg production of the long-interval flock was less with both generations than with the short-interval hens. First generation produced an average of 35 fewer eggs per hen while the second generation dropped to 44.

Some variations occurred, however, according to the scientists, and it is believed that the methods of interval determination and selection used did not adequately evaluate long-interval hens.

Meeting of Northwest Grain Unit Scheduled

SPOKANE, WASH.—The Pacific Northwest Grain Dealers Assn. will hold its 39th annual convention June 8-9 at the Davenport Hotel, H. L. Powell, Lewiston, Idaho, announced.

Mr. Powell, who is president of the association, said the convention would be one of the most important in the association's history in view of recent developments in the grain trade. The association has more than 230 dealer members in Washington, Idaho, Oregon and Montana and many more associate members in those states.

Some of the business of the convention is expected to be devoted to overcoming "erroneous impressions" created with the general public as a result of attempts to make it appear that grain dealers are reaping excessive profits from storing surplus grains.

Convention general chairman is H. W. (Pete) Poort, Jr., Spokane.

Reports Installations

BOONE, IOWA—Installation of 39 new aeration and temperature systems has been reported by Rolfes Grain Aeration Co.

More than one-fourth of these installations, 11, were made in Iowa. Installations made in other states were: Texas and Ohio, 4 each; Kansas, 3; Illinois, Michigan, Missouri, Nebraska and North Carolina, 2 each, and Arizona, Kentucky, Maryland, Oklahoma, Oregon and Pennsylvania, 1 each.

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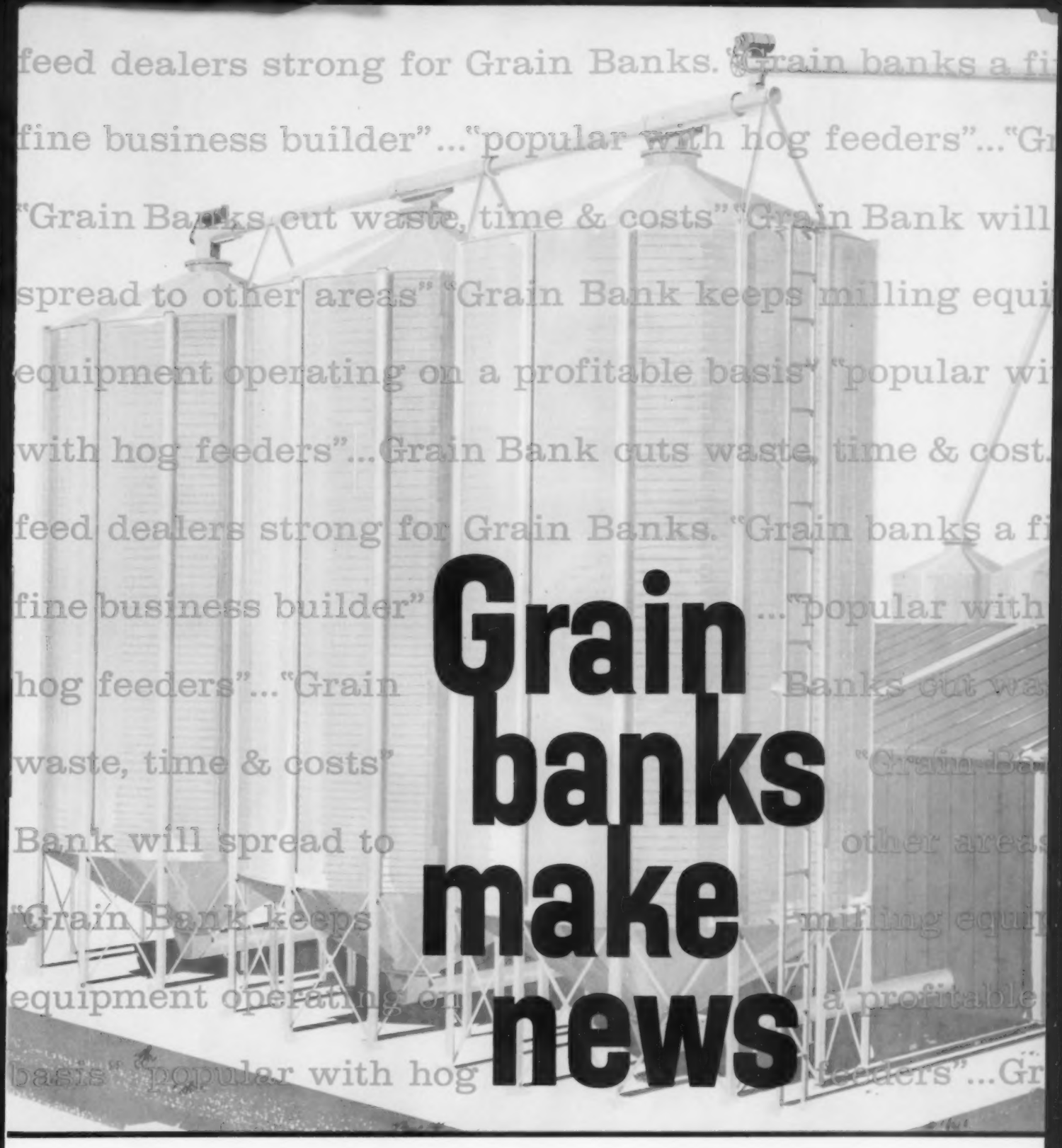
feed dealers strong for Grain Banks. "Grain banks a fi
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"Grain Banks cut waste, time & costs" "Grain Bank will
spread to other areas" "Grain Bank keeps milling equi
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Grain banks make news

Profitable for everyone, the grain bank idea is sweeping the country. And today, thousands of progressive feed merchandisers are offering this service.

Hog, cattle and poultry feeders like the grain bank because it saves them the tedious, time-consuming job of constantly grinding and mixing feeds. Now, they can shell big quantities on off-days, deliver it to their grain bank and have freshly mixed feed delivered to their bulk feeders whenever they need it. And, by using accurately prepared, balanced rations feeders also enjoy a gain in feed efficiency. With grain bank service, feeders don't have to tie up their capital in high, fixed-cost investments such as grinders and mills.

Feed merchandisers like the grain bank idea because it assures them a steady volume of grinding and mixing . . . enables them to sell more concentrates and supplements. Equally important, the grain bank enables feed merchandisers to meet competition from on-farm mixing and offers the progressive feed merchandiser new business opportunities.

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STOR-O-MATIC TANKS

safe storage...fast handling at low cost per bushel

The grain bank offers unusual profit opportunities. But, it usually requires additional storage and handling facilities to take care of increased volume. How can you build new facilities and still offer grain bank services at a price that will attract prospective customers?

The answer is simple! New, low-cost Butler Stor-O-Matic tanks enable you to build the facilities you need to handle this new business. And, you can keep your investment in new storage and handling equipment to a minimum.

These big capacity tanks make it easy to segregate, grade and store large volumes of grain in a minimum of space. Complete with hopper bottom and optional discharge auger, Stor-O-Matic tanks are real working bins. They can be unloaded quickly, economically. With Butler aeration system, grain condition can be maintained easily. Butler all-steel, weather- and vermin-tight construction keeps grain clean, dry and bright. Maintenance and insurance rates are low. And, Butler mass-production brings you this outstanding steel, self-unloading storage tank at a low cost per bushel.

Single tanks, or a multi-tank installation, plus mechanical or pneumatic handling equipment can be tailored to fit your exact needs.

SPECIFICATIONS

Model	Diameter	Overall Height	Nominal Capacity (bu.)	Maximum Capacity (bu.)	Cubic Feet	Wt., lbs.
18C9	18′	37′-2″	5340	5845	6648	8931
18C12	18′	45′-2″	6957	7543	8661	10432
18C15	18′	53′-2″	8575	9242	10675	13400

★ *Nominal capacity is based on filling tanks level full to roof. No compaction included. Bushel based on 1.245 cubic feet.*

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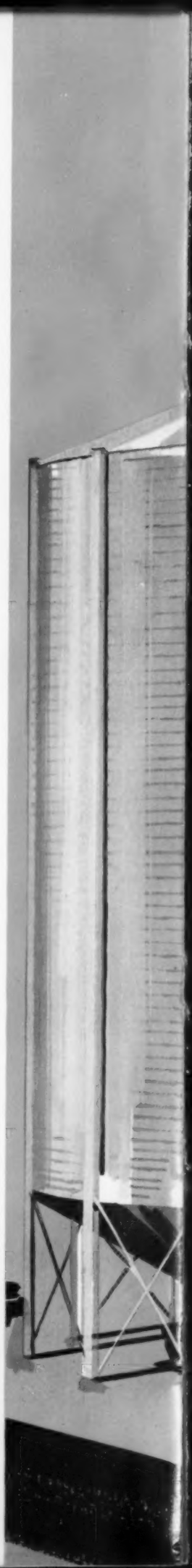

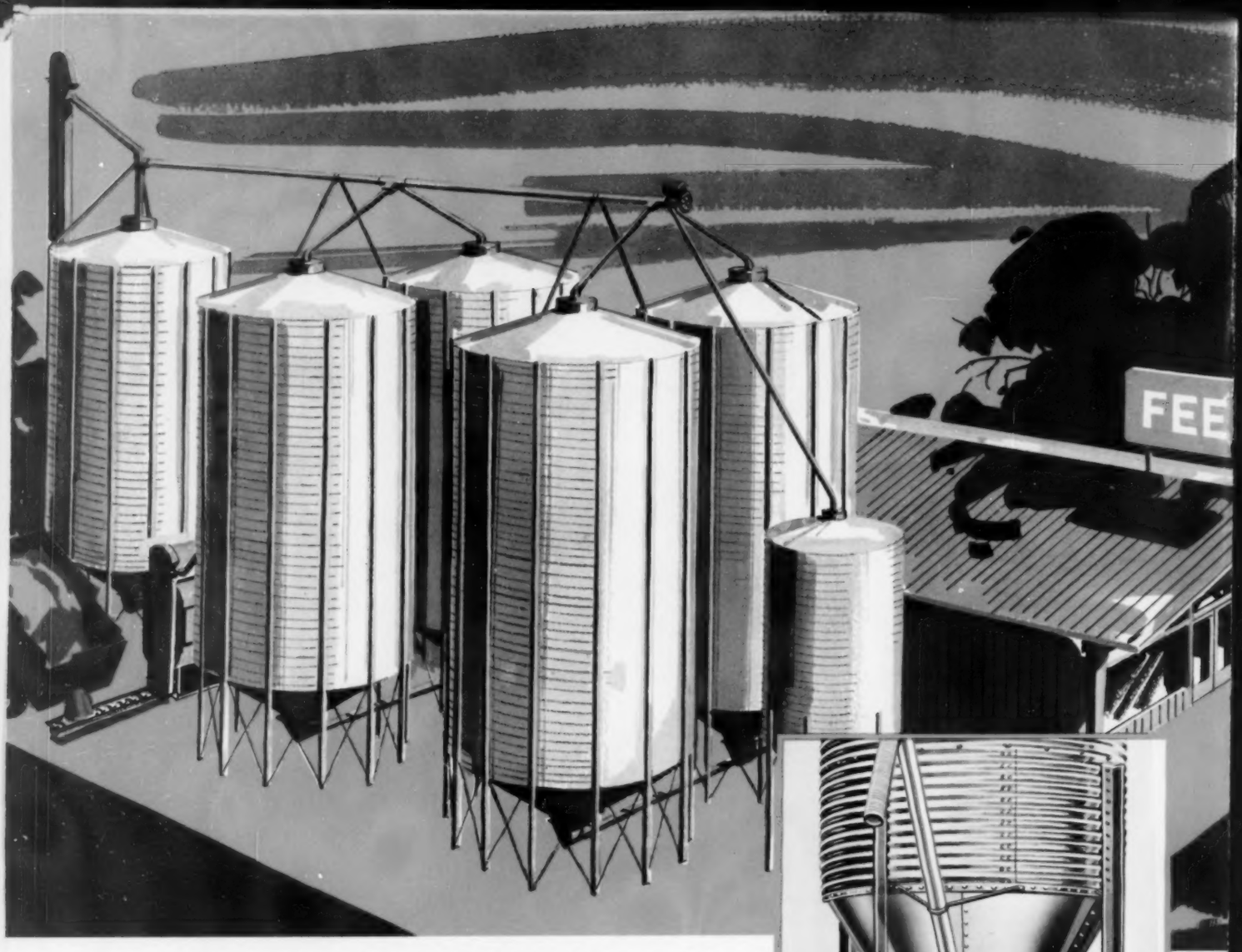

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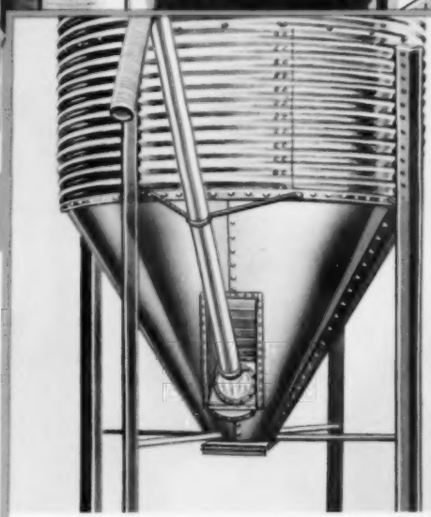
everything you need to offer a complete grain bank service

Grain-drying facilities are essential to handle high moisture crops. Butler can supply a complete package—including tanks to receive high-moisture grain; the new Butler 395-bu. batch dryer, Stor-O-Matic and bulk supplement tanks, the elevators, screw and belt conveyors and finished formula load-out tanks needed to give you an efficient, push button controlled grain bank center.

Stor-O-Matic tank installations can be tailored to fit any space or volume need. The new Butler batch dryer has the speed and capacity to dry large volumes of grain quickly, safely and maintain uniform quality. It can be a profitable part of your grain tank service.



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Butler Bulk-O-Matic tanks with exclusive Live-Bottom-Action hoppers offer improved feed handling . . . safe storage. This outstanding line of bulk feed tanks gives feed merchandisers a strong competitive edge with their customers.

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Feed Compound

Micro-Prills shown 12 times actual size. The smooth, round balls flow freely, won't cake.

Grace urea has proved superior in keeping feed quality up, costs down. As a result, manufacturers who use this high protein supplement in their feeds have a big advantage in a highly competitive market.

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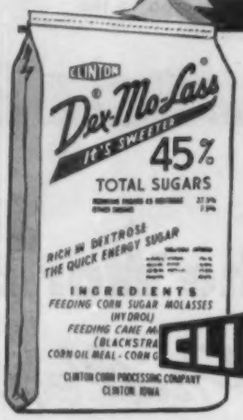

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HERE is a handy little machine that makes bag closing fast, easy, and economical. It is recommended where operations are limited or intermittent and do not justify installation of large, high production machines.

- **LIGHTWEIGHT**—9½ pounds. Carry it anywhere. No installation; requires only an electrical outlet.
- **POWERFUL**—Exclusive top and bottom feed for greater power and production. Direct drive motor with thumb control button.
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- **SAFE**—Anyone can operate it. No special training required. Can be obtained with overhead suspension. Also, can be supplied with pedestal bracket. Send for descriptive literature.

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NEW SOLON MILL—This is an exterior view of the new elevator and custom mill of the F. J. Krob & Co. at Solon, Iowa. John Phillips, brother-in-law of the Krobs, operates this mill.

Feed Firm's Grain Bank Plan Wins Regular Patronage

By Al P. Nelson
Feedstuffs Special Writer

For 11 years F. J. Krob & Co. has been offering customers a grain bank plan, and it has proved successful in winning a great deal of regular patronage. Customers say that the grain bank plan saves them time and labor and that through the grain bank plan they can get fresh feed ground and mixed by merely telephoning to the Krob Co.

F. J. Krob & Co. has elevator and custom mills at Ely, Solon, Rowley and Walker, Ia. In June, 1960, the firm will celebrate its 50th anniversary with a big meeting, free lunch, refreshments and other features. Frank Krob, who founded the firm, will come back to Ely from his retirement home in Arizona to meet customers and talk about old times.

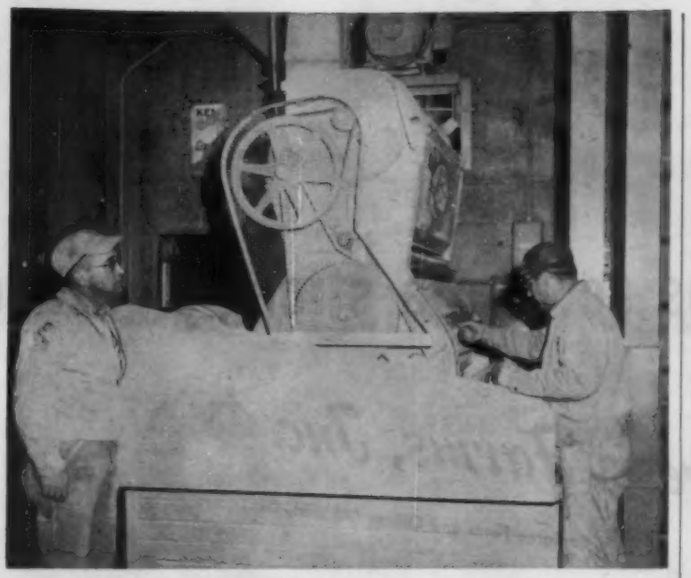
Robert Krob is manager of the Ely plant, Victor operates the Rowley mill and Norbert has charge of the Walker Mill. John Phillips, brother-in-law of Robert, Victor and Norbert, is manager of the new custom mill and elevator at Solon, Iowa. All Krob mills sell Kent concentrates and complete feeds.

The grain bank plan is now operative in all Krob elevators and mills. The firm issues a sheet of grain bank regulations so that all customers and prospects can see what points it covers. Only grain of good quality is accepted in the grain bank. The grain deposited is intended for grinding purposes and there is no handling or storage charge when grain is put in for grinding. However, whole grain withdrawn by the customer will be charged at the rate of 1¢ per bushel per month, reports Robert Krob.

The feed firm also reserves the

WEIGHING SUPPLEMENT—In this picture, an employee of the Krob mills weighs off some supplement into a weigh buggy.

LOADOUT AREA—This is the loadout area for custom mix. There are four bins above this area, which means customers orders can be made in advance on appointment.



CHECK EQUIPMENT—John Phillips (right), manager of the mill at Solon, and an employee of the mill check over some Roskamp equipment.

right to limit each customer's grain bank deposit to a three months' supply for grinding. The sheet which lists the grain bank charges also gives the grinding charges as:

⅛ inch screen ..... 14¢ cwt.
¼ inch screen ..... 12¢ cwt.
(Less than one ton)... 14¢ cwt.
½ & ¾ inch screen .... 10¢ cwt.
(Less than one ton) .. 12¢ cwt.
Mixing rates are 5¢ cwt.

The delivery charges for ground and mixed feeds are $1 per ton with a $2 minimum.

"The grain bank plan is well liked by our customers," states Robert Krob. "Of all the customers who get grinding done at Ely, for example, 90% are on the plan. The percentage is almost the same at our other locations. Of all Ely customers, 45% are on the grain bank plan."

"While we do not have any charges on the grain bank storage, we do operate on the principle of shortages and overages. Corn taken in on the ear corn basis is charged at ear corn rate, and so there is an overage for our firm. For customers not on the grain bank plan we charge 3¢ bu. for shelling corn and 10¢ for grinding."

F. J. Krob & Co. has an Aeroglide drier at Walker. Elevator storage at Ely is 59,000 bu., at Walker 102,000 bu., at Solon 60,000 bu. and at Rowley 190,000 bu.

If the Krob firm is called to pick up grain for storage or sale or immediate use from farms, the trucking charges are 2½¢ bu. for oats, 5¢ bu. on ear corn and 3¢ bu. on shelled corn. The firm charges $1 per ton for delivery of feed.

The Krob firms, located within 50 miles of one another, use three bulk trucks with Pamco equipment for bulk feed deliveries. One bulk truck

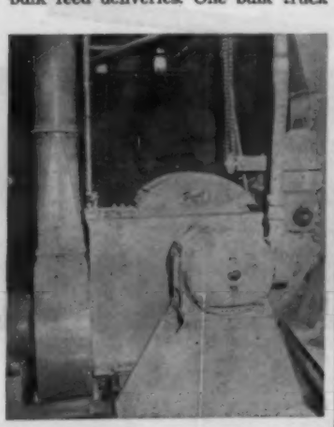
AT MAIN CONTROLS—John Phillips, manager of the Solon mill, operates the main floor controls for the mill.

is located at Rowley, one at Walker and one at Ely-Solon. Robert Krob points out that there are many small farms in the area, and that herds of hogs, beef cattle and flocks of poultry are smaller than in some other sections of Iowa. Therefore, a ton mix rather than a 2-ton load is average.

He also reports that many farmers with light pickup trucks will call for their own bulk feed, and then scoop it out when they return home. The bulk feed discount here is $5, with another $1 per ton when the farmer picks up at the mill.

"Thus far, one bulk truck is able

(Turn to page 44)



HAMMERMILL—This is a view of the 75 h.p. Bryant hammermill. Grain is brought to the hammermill by an auger from the dump pit.

COB WAGON—This is the metal-sided and roofed cob wagon. The cobs are husked before going into the cob wagon. The cobs are sold for litter.

FORTIFICATION ALONE WON'T DO THE JOB...I NEED *ASSISTANCE, TOO!
1960 PROBLEMS
WELL... FOR FORTIFICATION Plus A PLAN— CALL THE ULTRA-LIFE MAN
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Profit Power Plan

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One of the country's oldest and largest manufacturers of vitamin and trace mineral products.

ONLY BULKANIZER OFFERS SO MUCH THAT'S NEW

and Bulkanizer maintains local mounting points to give you fast service — whenever you need it

New design—New, four foot, add-a-section body design offers you units of 8, 12, 16, 20 and 24 ft. bodies. Steep V design assures complete unloading without sweeping or scooping. Large all steel weatherproof hatches individually operated for each compartment.

New capacities at a low investment — Bulkanizer capacities range from 10,000 lbs. in the 8 ft. body to 30,000 lbs. in the 24-foot body. Handles all dry feeds including pelleted feeds. Patented gates for handling pelleted feeds with the utmost of care. Compartment design means you can haul several different types of feed on one delivery run.

New delivery efficiency — Double swivel auger system makes high, low or over obstacle deliveries fast and easy. Fully enclosed worm gear swivel rotates auger system 360°. Large capacity hydraulic pump makes raising and lowering elevator simple and easy. No pulleys or cables needed.

Local service points — Bulkanizer maintains local mounting and service points. If and when your Bulkanizer needs servicing, your local dealer can get you back in business in a hurry.

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Miami, Florida Guelph, Ontario
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SIOUX CITY, IOWA

Manufacturers of the famous Grain-O-Vator

"STONEMO helps develop a strong digestive

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Pacific Coast Representative
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Latin American Representative
WILLIAM LEWIS
Special Representative
NEAL GUNN
Manager Pedigree Breed Department
CLYDE JONES
Credit Manager

October 26, 1959

Mr. Charles L. Davidson, Sr.
President
Stone Mountain Grit Company, Inc.
Lithonia, Georgia

Dear Mr. Davidson:

To withstand stress and strain requires good digestion -- both in people and in broilers.

In our Vantress strain of males we have found a strong digestive system to be very necessary.

Our highly selective blood lines are noted for their ability to use feed efficiently. To further insure good feed utilization, we give our birds Stonemo Granite Grit. Stonemo helps develop a strong, muscular gizzard to grind feed finer and keep the digestive system in good condition at all times.

We appreciate the role Stonemo plays in good management, helping us produce our Vantress male line variety.

Sincerely yours,

Chas Vantress

Charles D. Vantress
President

CDV/h

STONEMO GRANITE GRIT

It's What's Inside the

system to withstand stress and strain"

says

Charles Vantress

No product costs so little yet does so much to develop broilers with strong digestive systems as STONEMO GRANITE GRIT— Research *Proved*— Industry *Approved.*

Above—Mr. Charles Vantress inspects one of his precision bred Vantress males.

Above—Aerial view of the ultra-modern Charles Vantress Farms.

STONE MOUNTAIN GRIT COMPANY, INC. • Lithonia, Georgia

Gizzard that Counts

to handle larger bulk orders for our two mills at Ely and Solon," states Robert Krob, "especially since many farmers pick up their own."

Mr. Krob reports that during 1960, his firm will remodel the Ely custom mill, add newer equipment and also build a large farm supply store and office at Solon.

Newest Mill Opened

The newest Krob mill is at Solon, and it was opened in April, 1959, with Mr. Phillips in charge. This elevator and an older mill were bought in 1934.

The concrete elevator storage silos hold 60,000 bu. of grain, and the drivein between the elevator silos and the custom mill has two dump pits. The grain dump for the elevator storage holds 500 bu. and has a Barnard & Leas leg. The mill dump holds 75 bu. and feeds to a Sidney leg. The drivein is also equipped with a Kewaunee hoist. The scale at the nearby office is a 20-ton Howe.

Grain is brought to the 75 h.p. Bryant hammermill (plus 40 h.p. fan) by an auger from the dump pit. From here, it goes into an overhead bin where it can be put by gravity into a 2-ton Fairbanks hopper scale. Bulk feed to be used for mixing is drawn off into an Allied weigh buggy.

Considerable corn and oats are ground ahead of the mixing process and put into two overhead bins, from which needed grain can be drawn when necessary. A Sidney 2-ton mixer is used. Following the mixing process, the feed is moved by vertical screw through pipes into four bins over the loadout area. Each of these bins holds 5 tons. Thus, the mill management can grind and mix a number of orders and have them waiting for farmer pickup or for delivery by the firm's bulk unit.

"This storage bin arrangement helps us very much in maintaining a high tonnage output on busy days," states Mr. Phillips. "A great deal of our grinding and mixing is on an appointment basis, so we know approximately when some farmers are coming in to pick up their feeds."

The firm also has seven steel bins for the storage of concentrates and other ingredients. Materials are received by both rail and trucks.

Other equipment at the mill includes a Bryant corn sheller and a Roskamp oat huller and roller. At the rear of the mill, there is a metal sided and roofed cob wagon. Mr. Phillips says that the cobs are sold for litter, and there is a steady demand for them. The cobs are husked before going into the cob wagon. These husks are also blown into a special wagon outside the mill. Customers can get the husks free, but there is a charge for corn cobs at $2.70 per ton. Oat hulls are just hauled away and dumped, for there is no demand for them.

Sales problems of the Ely and Solon mills and elevators are handled by a resale man who works for both mills. In this way, the salesman has a sizable territory and can route business to the mill nearest the customer. Such an arrangement also prorates the sales cost and enables the organization to keep a salesman in the territory every day full time.

"We are planning to build a new office and farm supply store here at Solon," states Mr. Phillips, "as well as installing a larger scale. We do have a small supply of farm items, such as gloves, poultry and livestock remedies, etc., now and they sell well. We expect we'll be able to get more volume from such items when we can carry more of them in stock."

The firm has a large bag warehouse 40 by 100 ft. which has metal sides and roof. Bagged feeds are stored here since the firm does a large business in this type of feeds. The warehouse has a large drive-in door which enables farmers to come inside for quick and easier loading of bagged feeds.

Research Tests Early Weaning for Calves

ST. PAUL, MINN.—It may be possible to wean dairy calves earlier than has been the practice in the past.

In several recent trials, University of Minnesota dairy cattle researchers took calves off all liquid feeds at 28 days of age.

The calves continued to grow well and stayed as healthy as would have been expected if they had stayed on milk or milk replacer. They had gained about a half pound per day up to weaning, and by 6 weeks of age were averaging about a pound per day.

Early weaning can mean more economical calf feeding and would be much more convenient for many farmers.

Most dairy farmers wean calves between 6 and 8 weeks of age, although calves are usually eating quite a bit of dry feed and hay by that time.

The calves in the early weaning trials were fed 8 pounds milk daily until 4 days of age, and received 4 pounds milk and 4.4 pounds of liquid milk replacer from then until 10 days old. From 11 days of age until weaning at 28 days, the researchers gave the calves 11 pounds of liquid milk replacer each day, and dry calf starter and alfalfa hay.

After 29 days, the calves received no more liquids except water.

The trials were conducted by dairy husbandmen W. A. Olson and J. B. Williams on the St. Paul campus and Kenneth Miller, animal husbandman at the Southern Experiment Station, Waseca.

Pork Markings Same

WINNIPEG—Canned surplus pork from government stocks in Canada has gone on the market under the brand name of its original packing house company, as was previously announced by Douglas Harkness, agriculture minister.

Housewives will not be able to distinguish between the government pork and the regular brand-named canned pork, due to the cans having regular brand names on them and no special government markings.

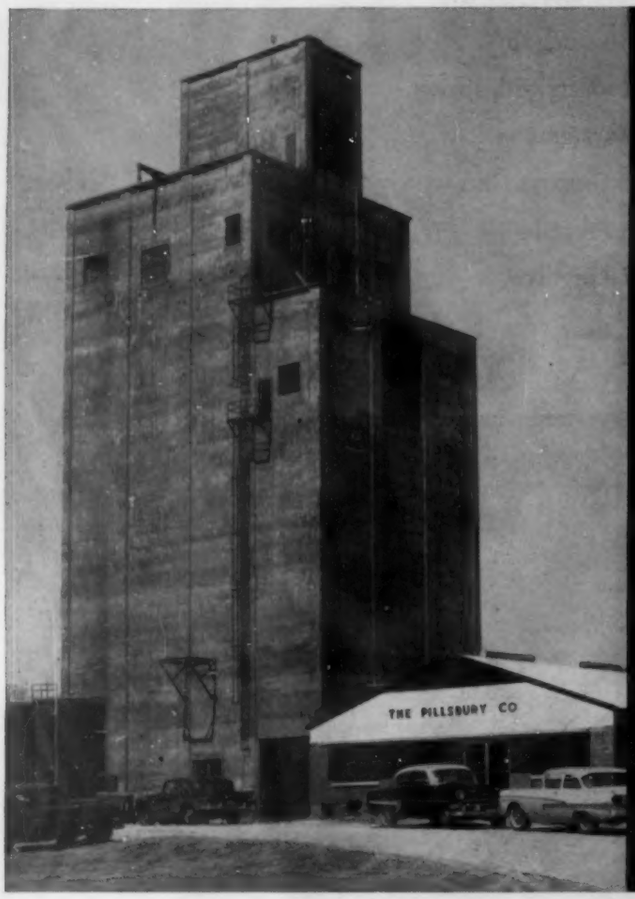
This is the first of some 140 million pounds of surplus pork which the government bought under its price support program. This plan was replaced earlier this year by the deficiency payment program in an attempt to eliminate surplus production.

Feed Firm Moves

MANCHESTER, N.H.—Merrimack Farmers Exchange, Inc., held an open house program at its new location near the Boston & Maine Railroad station here.

The public was invited to the grand opening from 8 a.m. to 9 p.m., and several prizes were offered.

Merrimack Farmers Exchange operates a feed mill in Bow and more than a score of feed and farm supply stores throughout New Hampshire.



Pillsbury's newest feed mill opens soon in Jasper, Alabama

100,000-ton plant to help meet ever-growing demand for Pillsbury's BEST Feeds

Big news in the feed business... Pillsbury's newest feed mill at Jasper is now in operation. It's another link in Pillsbury's expansion to serve even more of America's *most demanding* feeders . . . giving them what they want. Quality! Satisfaction! Top performing feeds! Tested feeding methods! Research!

These are the keys to more profit from sales of meat, milk and eggs—what feed customers demand today!

Big dealership value for you . . . and there's no doubt about the high volume potential in a Pillsbury dealership.

Pioneering research creates a top quality product and new, profit-making ideas for the feeder. Take Pillsbury's Climate-Blended Laying feeds . . . or the World Champion Maxi-Lay Queen . . . or Pillsbury's Life-Cycle feeding programs for all classes of livestock and poultry.

Get the facts on how you can sell Pillsbury's BEST Feeds. Grow with an ever-growing company. Benefit from Pillsbury's stature! Sales and dealership information are available to you.

Write: Sales Manager, The Pillsbury Company, Clinton, Iowa. Inquiries held in strictest confidence for your protection.

Pillsbury's Pillsbury's BEST Feed XXXX Feeds

Serving America's most demanding feeders

Study Indicates Ethanol Steps Up Cellulose Digestion

NEW BRUNSWICK, N.J.—Rate of cellulose digestion and urea nitrogen utilization in ruminant animals were improved by ethanol (ethyl alcohol), used as a feed additive, in recent experiments conducted at Rutgers University.

New Jersey Agriculture, a Rutgers publication, observed that the basic work by Dr. Werner Jacobsen—aimed at determining the nutritional significance of ethanol in a liquid supplement for ruminants—contributes further understanding to midwest livestock nutrition studies which have indicated that ethanol speeds up microbial metabolism in the rumen.

Basic Roughage

Poor-quality orchard grass hay, containing 6% crude protein and 35% cellulose, was used as a basic roughage during the two-year Rutgers study. Fixed quantities of the ground hay were weighed into beakers, which contained rumen fluid collected from a fistulated cow, and artificial saliva. The beakers were capped and fermentation was allowed to proceed.

"When ethanol and urea were both added to the fermenting system, an increase in cellulose digestion was observed," Rutgers scientists reported. It was explained that very small quantities of ethanol achieved this faster cellulose digestion by speeding up the bacterial growth cycle in the rumen. Ethanol and urea, working together, increased cellulose digestion beyond the additive effect of each of the two materials.

The report of the study said ethanol, as a hydrogen donor, aids the metabolism of rumen microorganisms by lowering the oxidation-reduction potential (an electro-chemical condition in the rumen which influences the metabolism of rumen microorganisms). This, it was explained, enables the microorganisms to attack cellulose more quickly, and to better utilize urea nitrogen to manufacture protein.

Dr. W. E. Petersen To Retire in June

ST. PAUL — William E. Petersen, internationally known professor of dairy husbandry, will retire from the University of Minnesota in June.

In his 39 years at the university, the colorful Pine City, Minn., native has advanced a number of new findings and principles on milk and milk production — findings noted around the world. He has been a speaker on dairying and dairy research in all but two states and in more than a dozen other nations.

Dr. Petersen has received several major awards, including knighthood from the King of Denmark in 1952.

In his research over the years, Dr. Petersen:

Produced in 1929 the first experimental evidence that a calcium deficiency is involved in milk fever in dairy cows, a finding which led to development of effective treatments.

Found that the hormone oxytocin causes cows to let down their milk.

Developed a rapid milking procedure now widely used by farmers and exploded the old idea that cows must be milked at regular intervals.

Studied in minute detail how cows go about making their milk and certain milk components, partly with help from a "mechanical cow"—an artificial heart-and-lung unit which keeps a severed udder functioning for as long as 12 hours.

Advanced, in cooperation with Berry Campbell, former University anatomist, the principle that the cow's udder will produce disease antibodies in the milk after being injected with disease-producing organisms. According to their theory, persons drinking the milk absorb the antibodies into the circulatory system and thereby develop temporary immunity to the ailment involved.

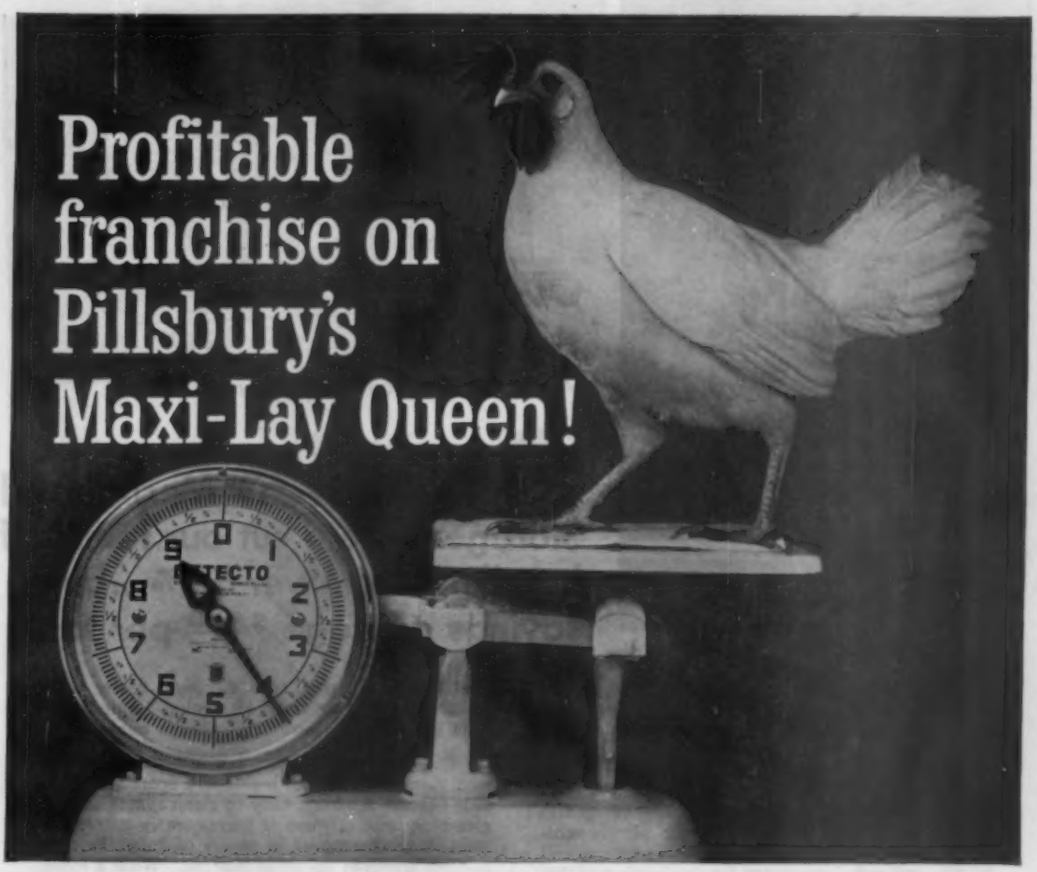
One of the major debatable points in the "immune milk" theory has been whether humans or other animals more than a few days old can absorb antibodies introduced through the digestive system. Dr. Petersen contends such absorption is possible at any age.

Feed Plant Opens

MONTEREY, IND.—Formal opening of a new feed plant by the Buckeye Feed & Supply Co. was celebrated recently here.

A grain bank system is in effect with a total grain storage capacity of 220,000 bu. A new continuous Hess grain drier is installed, along with a Bryant corn sheller and a 115 h.p. Bryant hammermill with automatic screen change. Grain is blown from the grinder to either one of two Sidney 3-ton mixers. All equipment, except mixers, is controlled by push buttons at one central spot.

CONFERENCE PLANNING — Shown making plans for the Institute of American Poultry Industries 1961 Fact Finding Conference in Kansas City are (left to right): E. L. Pavel, manager of Kansas City's Convention and Visitors Bureau; L. A. Manne, Manncraft Exhibitors Service, decorator and service agent for the conference exhibit; Lee Campbell, the Institute's exhibit manager, and John Antonello, director of the Municipal Auditorium in Kansas City.



This lightweight bird has the EXTRA everybody wants!

High profits for HATCHERYMEN

A Maxi-Lay Queen franchise eliminates the royalties some companies charge, cuts record keeping to nothing. And the Maxi-Lay Queen is competitively priced . . . up to 11¢ per chick less than some other lines. The high production features of this lightweight layer make her a leader in the poultry business.

Maxi-Lay Queens are a product of years of testing and breeding, involving over 100 top strain crosses. Franchises are backed by Pillsbury research and advertising.

You can supply the kind of bird your customers demand with the Pillsbury Maxi-Lay Queen franchise. Write for franchise information now . . .

High production for CUSTOMERS

Here's performance! Chicks with livability up to 99.1% average by test. They're bred to lay 89% large eggs—by test 96.7% grade A or AA—with high production from the start. Her top quality eggs bring the better market prices. And when mature, she'll weigh only 4 to 4½ pounds, compared to the 5¼ pound commercial layer. Being smaller, Maxi-Lay Queen takes less feed . . . and the yearly feed saving is equivalent to her cost as a chick.

1960 APHF CONVENTION

Visit the Maxi-Lay Queen booths

E-121 and E-123 July 19-20-21 in Memphis

Get the Grand Champion layer

Maxi-Lay Queens

bred for the most demanding poultrymen

Pillsbury's Feeds

FOR FRANCHISE INFORMATION WRITE:

Maxi-Lay Queen, The Pillsbury Co., Clinton, Iowa

Putting Research To Work

BY SPENCER H. MORRISON, PH.D., D. V. M.

Effect of Cutting Interval and Stage of Maturity on the Digestibility and Yield of Alfalfa.

By W. C. Weir, L. G. Jones and J. H. Meyer, University of California; Journal of Animal Science, Vol. 19, No. 1, pp. 5-19, February, 1960.

ABSTRACT AND COMMENT

Numerous investigations have been conducted over the past years on the effect of cutting time on the feeding value, yield and survival of stands of hay crops. Also, some of the newer techniques, such as the chromogen-chromic oxide ratio methods have greatly aided in determining digestibility and yields of crops being consumed by grazing animals.

However, there is a continuing demand for more data regarding the feeding value of harvested roughage crops under varying conditions since they form such a large part of many farm animals' diets.

The California workers have completed the analysis of the results of a four-year study evaluating cutting stage (pre-bud, bud, one tenth bloom, one half bloom) on yield of irrigated alfalfa. For three years, the plots were clipped at the indicated stages, while in the fourth year all plots were cut at approximately the one tenth bloom stage to measure the after effects of the three previous years' treatments.

During the three years of differential cutting treatment, the greatest yield of dry matter was given by the plots cut at the bloom stages, with significantly less amounts for the bud and pre-bud stages. It is extremely interesting to note, however, that in the fourth season when all of the alfalfa plots were cut at the one tenth bloom stage, there was no significant difference in yield despite the differences in treatment during the previous three years' seasons. Stand counts made during the four years of this study showed no difference in plant density due to cutting treatments and the reduced yield of the more frequently cut plots resulted from fewer culms per plant and slower recovery after cutting.

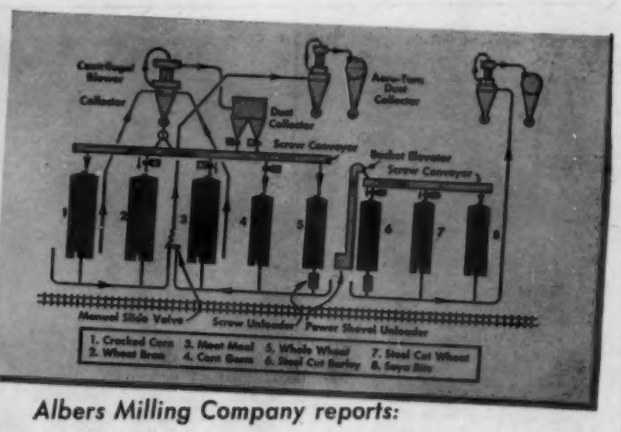
Ideal Conditions

Obviously, results such as those above can only be secured under the best of growing conditions with good soil and adequate fertilization and water supplies. Previous reports under less ideal conditions have indicated that sustained cutting of alfalfa or mixed grass-alfalfa-legume seedings at immature stages will adversely affect long time yields and result in quick depletion of plant density and/or "taking over" by grasses or weeds. Indications of this are also gleaned from the California work in that although the pre-bud and bud stage plots produced well the first year, by the third cutting season they yielded less.

The greatest protein yield per acre was secured with the plots cut at the one tenth bloom stage, especially after the first season. That cut in the bud stage produced well with respect to total protein in the first season, but less in the last two seasons. The pre-bud stage produced almost as much total protein as that cut at the one tenth bloom stage for the first stage, but had dropped to the lowest protein production by the third season. Applying digestibility data secured in other trials it was shown, however, that the largest amount of

(Turn to RESEARCH, page 144)

JEFFERSON, WIS. — Five 14' x 40' and three 20' x 50' *Permaglas* Mechanized Storage Units.



Albers Milling Company reports:

"Permaglas® Mechanized Storage System cut our feedstuff handling cost over 50%...bulk savings average $4.00 per ton"

As illustrated in schematic diagram, the Albers Milling Company's plant, Jefferson, Wis., uses two separate unloading and transfer systems which consist of eight *Permaglas* Mechanized Bulk Storage Units (five 14' x 40' and three 20' x 50'). They are equipped with A. O. Smith's exclusive mechanical sweep-arm bottom unloaders. The automatic *Permaglas* system makes possible completely sanitary storage and conveying of whole and cracked wheat, and soft ingredients for production of dry and canned dog food—called Friskies. Ten additional *Permaglas* Units with mechanical unloaders are serving at two other Albers Milling plants in Los Angeles and Kansas City.

Albers' Jefferson plant reports these substantial cost-savings in time, labor and bulk purchases: **more than 50% savings in labor handling costs...$4.00 per ton savings from bulk purchases rather than in sacks...considerable gain in warehousing storage space.**

The *Permaglas* Structures are glass-fused-to-steel construction both inside and out. They provide utmost sanitary, easy-to-clean systems. The gleaming coat of glass is permanently bonded to steel at temperatures in excess of 1500° F. with bonded strength up to 20,000 psi. What's more, the rugged, mechanical sweep-arm bottom unloader discharges free-flowing materials rapidly and efficiently—eliminating packing and bridging.

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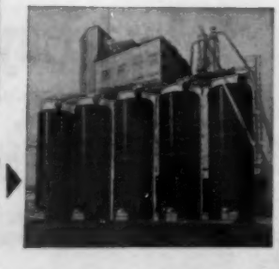
LOS ANGELES, CALIF. Five 14' x 40' *Permaglas* Mechanized Bulk Storage Structures.



KANSAS CITY, MO. — Five 14' x 40' *Permaglas* Mechanized Bulk Storage Structures.

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Volume of Milk Sold, Dairy Cash Receipts May Hit High

WASHINGTON — The volume of milk sold by farmers and cash receipts from the sale of dairy products probably will exceed previous records in 1960, according to a U.S. Department of Agriculture Dairy Situation report.

Cash receipts, which were $4,610 million in 1959, are expected to top the previous high of $4,634 million set in 1957.

However, USDA is quick to point out that dairymen's expenses also are likely to rise. Feed is the only major category likely to sell at prices lower than last year, but a larger volume will be used, says USDA.

Prices to farmers for milk and butterfat in 1960 will be approximately the same as in the past two years. Price support levels for milk and butterfat in 1960 will be approximately the same as in the past two years, USDA foresees. Price support levels for the marketing year starting April 1 are unchanged from the preceding two years, and supplies of milk products promise to be large enough to hold the average prices near support levels.

Following the pattern of recent years, the number of milk cows continued its decline, while milk production per cow again increased in 1959.

The number of milk cows on farms in 1959 was 19,322,000, compared with the 1951-55 average of 21,462,000. Milk production per cow in 1959 totaled 6,438 lb., compared with 5,543 lb. for the 1951-55 average. Total milk production on farms in 1959 was 124,396 million lb., a half billion pounds less than in 1958.

The number of milk cows on farms in the U.S. has declined in every year since 1944, except in 1953. However, the rate of decline has not been uniform since 1953. The rate of decline during 1958 was larger than in any year since 1948, but a decided letup in rate of decline occurred during 1959, continuing into early 1960. The number of young dairy stock increased significantly in 1959 and on Jan. 1, 1960, was a record high relative to the number of mature milk cows.

The dominant influence bringing about these changes in 1959 was the beginning of the decline in beef prices, although the sharp drop in hog prices also may have had some effect. Also instrumental in bringing about a decline in milk cow numbers have been technological developments that led to fewer farms engaged in milk production, together with greater output of milk per cow. Another influence was high levels of employment in the non-farm sector of the economy.

Beef prices may drift downward further during 1960, probably more than offsetting any influence on cow number or higher hog prices. As a result, the number of milk cows on farms is likely to decline only a little further this year, and, within the next year or so, may exceed the level of a year earlier.

In the first quarter of 1960, the rate of milk production per cow was depressed by adverse weather, particularly during March. Nevertheless, output per cow exceeded that of a year earlier, and total output for the month was up 1%, the same increase as recorded for the first quarter as a whole.

From later this spring into next fall, production per cow probably will show larger increases over a year earlier when pasture conditions for milk production were somewhat adverse. Thus a rise in total milk output appears likely for this year.

The increase in milk production per cow reflects a whole complex of developments. Productive capacity of milk cows unquestionably has been expanded through the steady general increase in use of artificial insemination and the availability of higher quality sires for those dairymen who have not yet adopted artificial insemination.

Another development is the increase in quantity of concentrate feeds fed per animal, with its effect in realizing more fully the productive capacity of all dairy animals. Along with the increased quantity of concentrates fed there was substantial improvement in the quality of roughages supplied to dairy cows.

Chicago Company Buys Dunbar-Kapple, Inc.

CHICAGO — DK Manufacturing Co., Chicago, has purchased Dunbar-Kapple, Inc., Batavia, Ill., from General American Industries, Inc., New York. The former General American subsidiary will be known as Dunbar-Kapple division of DK Manufacturing Co.

Dunbar-Kapple manufactures pneumatic grain conveyors, among other products.

DK Manufacturing products include metal hose, high-pressure and high-vacuum vessels, and stainless steel ducting for the aircraft and missile industry.

Herbert N. Woodward is chairman of the board of DK Manufacturing, and Paul J. Firring is president. Both officials will retain their present positions.

The Batavia plant of Dunbar-Kapple, a 120,000-sq.-ft. facility, will be retained, with very few changes in manufacturing.

Feed Sales Up for Nulaid Farmers Assn.

SAN FRANCISCO — The largest volume of feed sold in six years was reported for 1959 by the Nulaid Farmers Assn. recently.

A total of 313,000 tons of feed was sold, amounting to $24,100,000. Patrons' purchases of farm production supplies, amounting to $1,800,000, were the largest in the history of the association.

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GO AND GROW WITH FUL-O-PEP! Team up with Ful-O-Pep now for profitable bulk and grind-mix business ahead. There's a payoff in Ful-O-Pep leadership for you . . . see your local Ful-O-Pep Representative, or write J. C. Huckabee, Feed Sales Manager, The Quaker Oats Company, Merchandise Mart Plaza, Chicago 54, Illinois.

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Agriculture Outlook Brighter Than Last Fall, Says USDA

WASHINGTON—The outlook for agriculture in 1960 now appears brighter than it did last fall, according to a recent demand and price situation report of the U.S. Department of Agriculture.

The index of prices received by farmers has increased some 5% between mid-December and mid-March, primarily due to higher prices for hogs, cattle, broilers and eggs, the report notes. Currently, the index is only slightly below the levels of a year earlier.

Prices received by farmers the remainder of the year may well average the same or even some better than in the same period of 1959, says the report. Farm cost rates, although quite stable in recent months, are at a slightly higher level than in 1959.

Livestock: USDA foresees beef cattle and calf prices averaging slightly lower than 1959, with hog prices "notably higher." The relatively favorable outlook for meat animal prices in 1960 is due to a prospective slight reduction in meat supplies per person coupled with the continuing strong consumer demand, says the board.

Dairy: USDA sees prices received by farmers for milk and butterfat in 1960 as remaining about the same as in the past two years, with the volume of milk sold probably reaching a new record. Cash receipts are expected to exceed the record $4.6 billion of 1957.

Poultry: A "pronounced rise" in egg prices is likely for the summer and fall of 1960, the report says. Declines below a year ago in broiler hatchings are likely to sustain prices through the summer at or above the mid-March average of 18.1¢ lb.

Terminal market prices for eggs in early April were the highest since September and about a third above a year ago, the report notes. On April 1, there were 4% fewer layers than a year earlier, and hatchings of egg-type chickens in the first quarter were down a third from last year indicating smaller supplies of eggs.

Feed: USDA foresees the possibility of the feed grain and concentrate supply increasing again in 1960-61 and the chance of its reaching a new record, if early spring prospects materialize. Production of feed grains may be a little below the 1959 record of 166 million tons, but the carryover will be around 10 million tons higher than at the beginning of 1959-60.

If growing conditions this year are about average, cash receipts from a continued heavy volume of farm marketings may well be about the same as in 1959. However, with some increase in farm production costs likely, realized net farm income of farm operators may fall slightly short of the $11 billion realized in 1959. Even so, USDA says, with the number of farm people continuing to decline and with income of farm people from non-farm sources rising as non-farm job opportunities expand, the per capita net income of farm people from all sources this year could well equal that of 1959.

General Mills Executive Assigned New Duties

MINNEAPOLIS—Edwin W. Rawlings, financial vice president of General Mills since March, 1959, has been named executive vice president in charge of finance and consumer food activities. The action was taken at a regular meeting of the board of directors of the firm.

Gen. Rawlings, formerly with the U.S. Air Force, retired in 1959 after more than 30 years of duty. He was widely-known as the outstanding business management expert in the nation's military organization, and became head of the Air Materiel Command, which buys, stores, transports and maintains the aircraft and equipment used by the Air Force.

Gen. Rawlings was born in Milroy, Minn., in 1904 and attended the public schools in Tracy, Minn. He received his B.A. degree with a major in economics from Hamline University in St. Paul. He entered the service as a flying cadet in 1929.

During his period of service with General Mills, Gen. Rawlings has supervised the activities of the comptroller's, treasurer's and commercial development departments. He has also been director of international activities for the company.

New Merck Salesman

RAHWAY, N.J.—James R. Espy has been appointed animal health sales representative in southern Illinois and eastern Missouri by the Merck chemical division. He will report to Charles E. Wall, region sales manager for Merck agricultural products in St. Louis.

Mr. Espy attended Holy Cross Abbey, Canon City, Colo. He received his bachelor of science degree in animal husbandry from California State Polytechnic College, San Luis Obispo, Cal. After graduation in 1957, he became farm foreman for Los Angeles County.

Names Vice President

MINNEAPOLIS—Ben Gustafson & Son Manufacturing Co., Minneapolis, producer of seed treating equipment, has named W. S. Acheson vice president. Mr. Acheson joined the firm in 1955 and was appointed sales manager in 1956. He will continue as sales manager.

IF you used these males you wouldn't need so many

For this reason . . . *every strain* which contributed to today's Peterson male was selected for disease resistance, as well as for growth, meat characteristics and hatchability. Peterson livability is built in! You'll mate a higher percentage of your males . . . they'll live better in your breeder flocks, too.

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In addition to its palatable and highly-digestible whey solubles and soy flakes, the New MRB formula contains choice white grease to bring the fat level up to 15%. By having your extra source of animal fats evenly dispersed in a product that flows freely and mixes easily you can actually cut down on mixing time as well as your product inventory.

Borden's Hi-Fat MRB – as well as the regular MRB formula – are the only Milk Replacer Bases available to the industry. They are both higher than dry skim milk or buttermilk in protein, gross energy values and vitamins. Yet, in spite of their nutritional superiority, Hi-Fat MRB and MRB are significantly lower in price than other milk nutrient sources.

Both MRB formulas are free-flowing, easily mixed and readily suspended when your calf milk replacers are reconstituted with water. Mix after mix, you'll find the MRB formulas consistently superior products that will fit all your formulation requirements for high-quality milk nutrients at a low cost.

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Replace high-cost milk nutrients in all your specialty feeds with low-cost MRB and Hi-Fat MRB — Calf Milk Replacers • Calf and Pig Starters • Dog and Cat Foods • Mink and Fish Feeds

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Our philosophy has been that of the pioneer: to find the better way. Our tools have been the techniques supplied by the research scientists, the technology of the college nutritionists, the skill of Amburgo trained field representatives. The advanced concepts developed through our intensive research and experimentation programs are proved in a down-to-earth manner, at Golden Acres, our demonstration farm in Bucks County, Pa. Also down-to-earth are our Nutrition Conferences, where both grass roots basic training in nutrition and information on the latest discoveries in the industry are translated from the technical terminology of the scientist to the common-sense application for the feed manufacturer.

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CELEBRATING 23 YEARS OF GO... 1937-1960

COLORADO DIRECTORS—This is the new board of directors of the Colorado Grain, Milling & Feed Dealers Assn. elected recently at the group's annual convention (left to right): Bottom row, Pete Koontz, Amherst; Dale Reimer, Holyoke; John F. Malo, Kenneth Lloyd, Al Gamble, Denver; Howard Stehwien, Monte Vista; second row, Terrance Hall, Akron; Jim Rawson, Burlington; Hubert Kohlmeier, Yuma; Del Ellis, Denver; Floyd Borders, Stratton; Bob Davis, Colorado Springs; Harold Johnson, Fort Collins; and Junior Parker, Wray. New officers are Mr. Rawson, president, and Mr. Ellis, vice president. Mr. Parker retiring president, also completes his duties as director of the association.

Utah Firm to Produce Salt, Mineral and Protein Blocks

WENDOVER, UTAH — The new $250,000 plant of Wendover Specialties, Inc., will produce a line of salt, mineral and protein blocks for feeding range livestock in the western states, according to Richard E. McLeod, vice president and general manager of the firm.

It is said to be the first manufacturing effort in the U.S. directed at bringing all three types of blocks to cattle on the range.

The products will offer practical ways to provide cattle on range with sufficient vitamins, minerals and protein, company officials said.

The development of a protein block which will not dissolve in rain or melt in sun is a key to vitamin feeding of range livestock, a company official said. "Add to this a soft-salt block, covered with a protein cap on three sides, and there's a solution to range feeding," he added.

At the new Wendover plant, a highly-automated system of mixing will permit the production of "customized" salt, mineral and protein blocks, it was announced.

"Within the 13 western states there is a decided variance in amount of calcium and phosphorus that grasses contain," officials said. "A special mix of mineral block will be produced here for the Montana-northern Idaho area, another mix for Utah, Nevada, southern Idaho and western Colorado. Still other proportions will be produced for sale in Arizona and New Mexico, and for southern California."

The base of the mineral and salt blocks is salt produced by Utah Salt Co.

A special $75,000 press, said to be the first of its kind in the salt industry, will produce both conventional "hard" salt block as well as the protein-covered, soft salt block and the protein block. The difference between the hard and soft block, Mr. McLeod points out, is "licking time."

"It takes an animal about 6-7 hours of licking to get her daily average salt needs on a hard block," Mr. McLeod says. "But an animal can munch a mouthful of salt with the new soft block in a few minutes, then stroll away and graze."

The base for the protein block will be cottonseed meal from California. The meal is mixed with molasses from cane sugar.

Mr. McLeod and his brother, Robert McLeod, who is sales manager for the concern, control approximately a third of Wendover Specialties. Utah Salt Co., which supplies the base for the salt blocks, owns 15%. The remaining shares are held by Van Waters & Rogers, Seattle, area distributor of chemical products.

Van Waters & Rogers will act as distributor agent throughout the western states (east to the Kansas-Nebraska line) for the production of Wendover Specialties.

"The location at Wendover was selected because of the geographic area, with reference to rail connections and truck service with other western states and the presence of salt from Utah Salt Co.," Richard McLeod explained.

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Proven high biological availability in CDP is assurance that you are buying usable phosphorus . . . that can be directly absorbed and easily converted to meat, eggs and milk.

CDP . . . through exhaustive feeding tests at independent laboratories . . . PROVES . . . not merely claims . . . high phosphorus availability.

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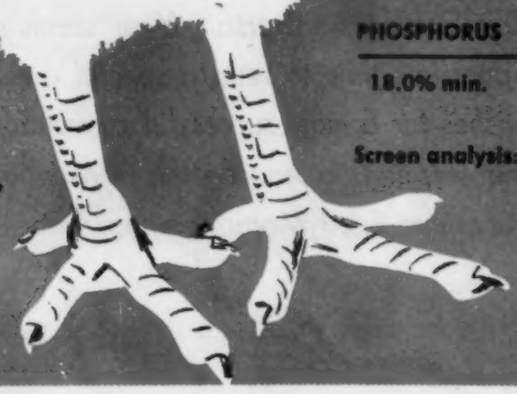
PHOSPHORUS	CALCIUM	FLUORINE
18.0% min.	31.0% min. 34.0% max.	0.18% max.

Screen analysis: All through 14 mesh, 80% on 200 mesh, plus or minus 5%.

Let us figure the cost of proven CDP delivered to your plant.



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Phosphorus	Calcium	Fluorine
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Screen Analysis: All through 20 mesh; 80% to 90% on 200 mesh.

Coronet Dikal is 18.5% analysis, all of which is biologically usable phosphorus. Smith-Douglass quality and service guarantee the kind of product you want, when you want it . . . and in any desired quantities.

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Southeast Poultry Unit Urges Investment Plan For Turkey Promotion

RICHMOND, VA.—A regional investment plan to support state and national turkey promotional work was recommended during the annual meeting of the Southeastern Poultry & Egg Assn.'s turkey committee.

Homer R. Kline, committee chairman, Harrisonburg, Va., said the recommended plan would ensure an adequate flow of funds to the National Turkey Federation to support state and national eat-more-turkey promotion campaigns.

The committee concurred with Mr. Kline's suggestion that the southeastern program be modeled after a plan currently in effect in Virginia, the region's state with the biggest turkey production.

The Virginia plan, as outlined by Mr. Kline, calls for a grower-contractor investment of 5¢ per 100 lb. (liveweight) on all turkeys marketed, a processor investment of 1¢ per 100 lb. (liveweight) on turkeys processed and a hatchery investment of 10¢ per 100 poults hatched.

"Our intention," Mr. Kline pointed out, "is to offer the Virginia plan as a possible basis for implementing the southeastern program on a uniform level, which will be necessary for practical administration of the regional adaptation."

The committee recommended that the Southeastern Poultry & Egg Assn. assist all the southeastern state turkey associations in implementing fund raising programs.

In other action, the committee agreed to undertake a study of the school lunch program in the Southeast with a view toward establishing closer liaison with school officials on the local level and to encourage the use of more turkey in school lunch menus.

Grading standards were reviewed, and the committee asked for a study of the present system to ascertain the needs for revision of the standards of grading based on the latest research findings.

In addition to Mr. Kline, other members of the turkey committee are Harold Mayer, Walterboro, S.C.; Charles Griffin, Marshville, N.C.; Homer Long, Edinburg, Va.; W. C. Bates, Jr., Fort Deposit, Ala.; W. F. Floyd, Forsyth, Ga.; Paul G. Thomas, Sumter, S.C.; Marvin Johnson, Rose Hill, N.C.; Oscar Boyst, Princeton, W.Va.; Baker Jones, Elkton, Va.; Glenn W. Rhodes, Ocala, Fla., and Carl H. Lay, Harrodsburg, Ky.

McMillen Promotion

FT. WAYNE, IND. — George Albright has been promoted to feed mill superintendent at the Memphis, Tenn., plant of McMillen Feed Mills, Ft. Wayne. Mr. Albright joined the firm in Memphis in 1949, and was promoted to assistant feed mill superintendent in 1955. The following year he was promoted to the production department in Ft. Wayne.

Delmarva Promotion Fund Drive Underway

SALISBURY, MD.—A drive to solicit $125,000 to promote Delmarva's broiler industry was kicked off this week here.

"People who are asked to support your organization should be given all the facts," said keynote speaker Willis Hancock, Snow Hill, agricultural representative for the Country Trust Co. of Maryland. "They should be told that support of the broiler industry supports all the area. They should be told that each bushel of corn used in poultry feed saves Uncle Sam approximately 25¢. They should be told that the average price of corn to the farmer on the eastern shore is 25¢ a bushel higher than to the farmer in the Corn Belt. They should be told that chicken manure from the poultry houses of our area has increased yields and general solid fertility tremendously."

He added that the public should be told it is cheaper for them to support the broiler industry with a few $100 dinners than to subsidize it with their tax dollars.

He pointed out that in some sections of Delmarva, broilers already provide 50% of the basic source of wealth.

Last year, 2,410 broiler growers, people in the broiler industry and all types of businesses gave more than $120,000.

Webb Cassell, president of DPI, noted that during the past two years there has been a shift in emphasis in in DPI activities. Its members and directors have felt that it should study its competitive position with other areas, with a view to finding ways to continually improve that competitive position.

For the 1959-60 period, they have earmarked approximately half of the DPI budget for these activities. Surveys and studies are underway and some major accomplishments have been reported already even though these kinds of activities are often long range projects which require from one to five years of work or more to pay off, Mr. Cassell said.

Here's the BULK FEED TRUCK BODY you've been waiting for

Sizes 10', 12', 14', 16', and 18'.

- ALL PURPOSE COMBINATION BULK BODY
- NO MANUAL LABOR — COMPLETELY HYDRAULIC
- NO NEED FOR 2ND UNIT — THIS ONE HAULS PRACTICALLY EVERYTHING
- NO OLD FASHIONED HOIST!

Here is a brand new idea in the handling and transporting of feed. New, because now you can handle bulk feed with ABSOLUTELY NO MANUAL LABOR, SAVING YOU TIME AND MONEY. One man at the hydraulic control panel raises the boom, positions it where he wants it, and unloads up to one ton of feed per minute — all without moving from the control panel which is operated from inside the truck cab. Yes, just one hand on the control panel, and the job is done.

What's more, the Curley Line Ton-A-Minute, Combination Bulk Body eliminates the need for a second unit, again cutting your overhead costs. Not only can the body be divided into three compartments for carrying three different formulas of bulk feeds, but the hinged inside angle sides can be easily raised and locked in place, which converts the bed into a standard truck body for carrying a maximum pay load of sack feed, grain, fertilizer or even farm stock.

At long last, here is the all-purpose combination bulk body that will really do a job for you. To learn the complete story — from the positive turning mechanism to the full length reversible auger to the heavy duty hydraulic system, clip and mail the coupon. Be sure to hear the Curley Line story before buying any feed truck body.

It will be well worth your time!

JUST LOOK AT THESE Curley Line FEATURES

1. Completely hydraulic bulk body delivers the feed where you want it with NO OLD FASHIONED HOIST, NO MANUAL LABOR.
2. Hinged sides convert into sack feed or grain body quickly and easily, eliminates the need for a second truck.
3. Full length, bottom discharge auger is reversible for front or rear discharge.
4. Positive turning mechanism. Boom stops immediately.
5. All welded, steel, heavy duty construction.
6. Hydraulic floor slides in all three compartments operate independently or together.
7. Unloads in minimum clearance areas — body is never raised to unload.
8. Tested on the job for speed, versatility, durability and proved performance.

DEALER INQUIRIES INVITED

CURL ENGINEERING AND MANUFACTURING CORP.
BOX 343 • MOUNT PLEASANT, IOWA

Clip This Coupon For Complete Information

Just clip this coupon and mail, together with your name and address, for complete facts about the Curley Line Ton-A-Minute Combination Feed Truck body. Of course, there is no obligation.

It's DANNEN for FERTILIZER and

- Feed Ingredients
- Soybean Oil Meal
- Tankage Meat Scraps
- Cottonseed Meal
- Grain Fumigants

DANNEN MILLS, INC.
Grain and Jobbing Division
St. Joseph, Mo.
Phone: Adams 3-6161

DANNEN

when poultrymen say:

YOUR FEED DOESN'T DO THE JOB!

when customers complain:

THE BIRDS MUST BE TO BLAME!

when prospects say:

I CAN'T AFFORD NEW EQUIPMENT

what's your answer?

here at last is a realistic answer that makes sense . . . in a new program of major importance to feed manufacturers, feed dealers, poultry breeders and equipment men

it's called . . . . . .

FPI *Full Performance Index*

FIRST: Meet Ralph

RALPH MANNING MAKES MONEY WITH LAYERS EVEN AT LOW EGG PRICES

That's why this year he is buying

3400 more chicks than ever before
2½ times more feed tonnage
new automatic waterers
new automatic feeders
extra roosts and nests
another pit cleaner
a new egg cooler
lumber, concrete, building supplies

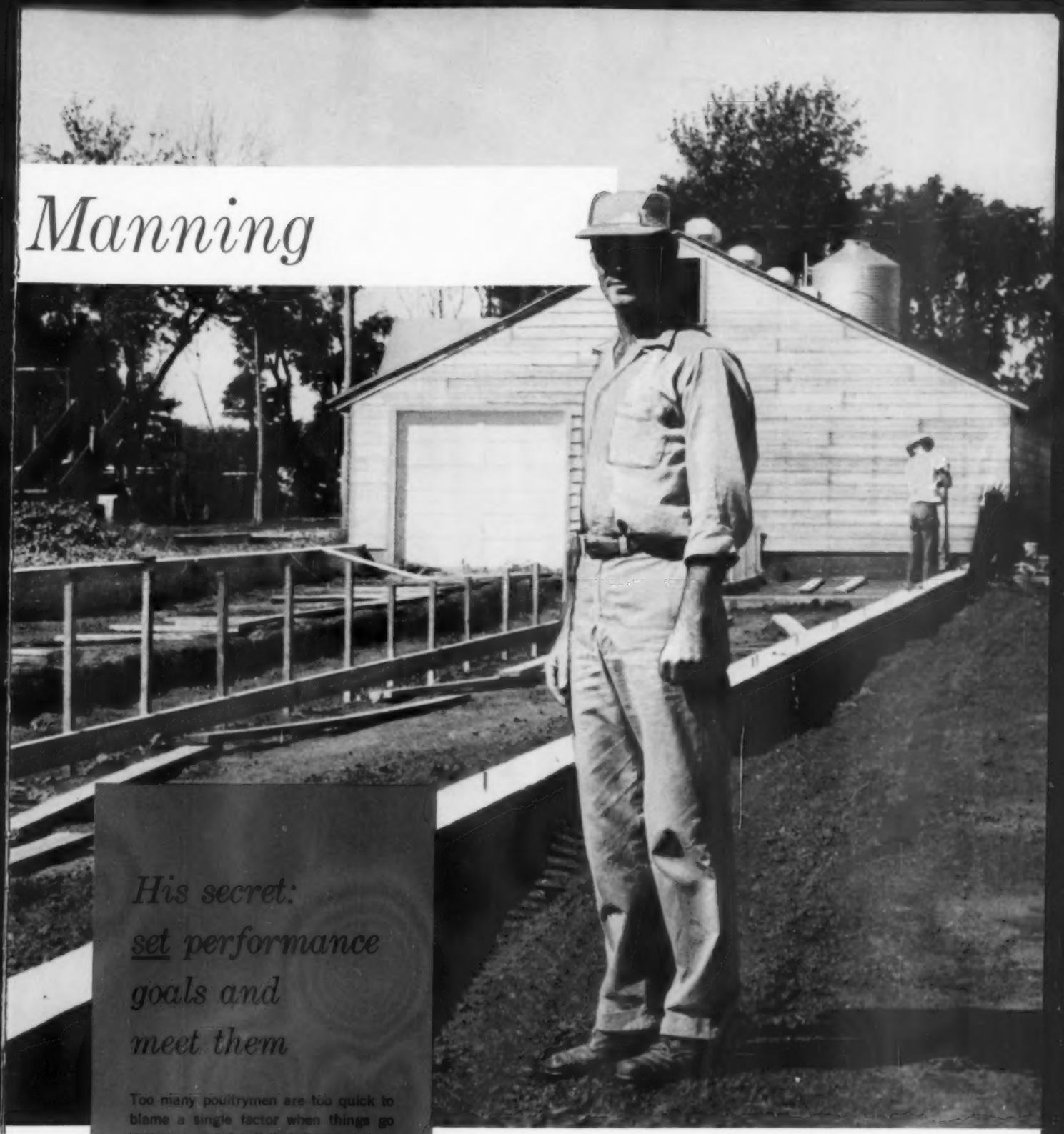
When Ralph Manning prospers...you prosper

Last year's depressed egg prices and a general lack of optimism in the poultry industry hurt more than poultrymen. Everyone . . . breeders, feedmen, equipment manufacturers, and many more . . . was affected.

In this widespread feeling of discouragement it was too easy to overlook the fact that many good egg producers were making money. Some, like Ralph Manning of Spencer, Iowa, did so well that this year they are actually expanding. They're buying *more* feed, *more* chicks, *more* equipment.

Clearly what the industry needs is more Ralph Mannings. Because *when Ralph Manning prospers, the people who serve him can prosper, too.* Besides more customers, we all need *better* customers.

Manning



His secret: set performance goals and meet them

Too many poultrymen are too quick to blame a single factor when things go wrong . . . or pin all their hopes on one way to improve profits. They buy good birds . . . and try to economize with cheap feed. They use good feed, but skimp on management and sanitation.

But Ralph Manning knows every factor must be in balance. He sets performance goals for his flock, then strives to meet or beat those goals.

As one expert points out, "Today the more progressive poultrymen are constantly aware of how they stack up against others in the industry. They know that how they rate with the best will determine their future."

Manning's Flock Performance Index shows how he's meeting his goals:

EGGS PER HEN	255
LIVABILITY	95½%
FEED CONVERSION	4.1 lbs./doz.
GRADE A EGGS	95%

Now turn the page to see what this means to you ➔

FULL PERFORMANCE INDEX

HESS & CLARK NOW ANNOUNCES A GOAL-SETTING PLAN FOR POULTRYMEN . . . A PROFIT-BOOSTING PLAN THAT REALISTICALLY TIES TOGETHER BREEDING, FEEDING, EQUIPMENT AND MANAGEMENT

IT PROVIDES A COMMON-SENSE WAY FOR YOU TO HELP YOUR CUSTOMERS HELP THEMSELVES. AND AS RALPH MANNING PROVES . . . WHEN THE CUSTOMER PROFITS . . . YOU PROFIT!

HERE'S OUR STORY TO YOUR EGG-PRODUCER CUSTOMERS

This dramatic 8-page announcement will introduce the FPI plan to poultrymen this fall in the major poultry magazines. Follow-up ads in leading poultry and farm publications will carry a total of 65-million ad-page impressions to egg producers during the next 12 months. Supplementing this effort will be a heavy schedule of announcements over powerful farm radio stations.

FPI

New guide to success in the fast-changing egg business

Whether or not you survive and prosper as a producer in today's fast-changing egg business depends upon you . . . and how efficient you make your operation. Good birds, good feeds, and careful management can go a long way toward helping you become more efficient. Here's what poultry experts say . . .

"Today the more progressive thinking poultrymen are constantly aware of how they stack up against others in the industry. 'Survival of the fittest' now takes on meaning as 'survival of the efficient.'" *Poultry Tribune*

"What's the most important management practice (for egg producers)? Set a goal! Daily records are your second-best management practice. Good management takes the 'luck' out of raising poultry." *Extension poultryman*

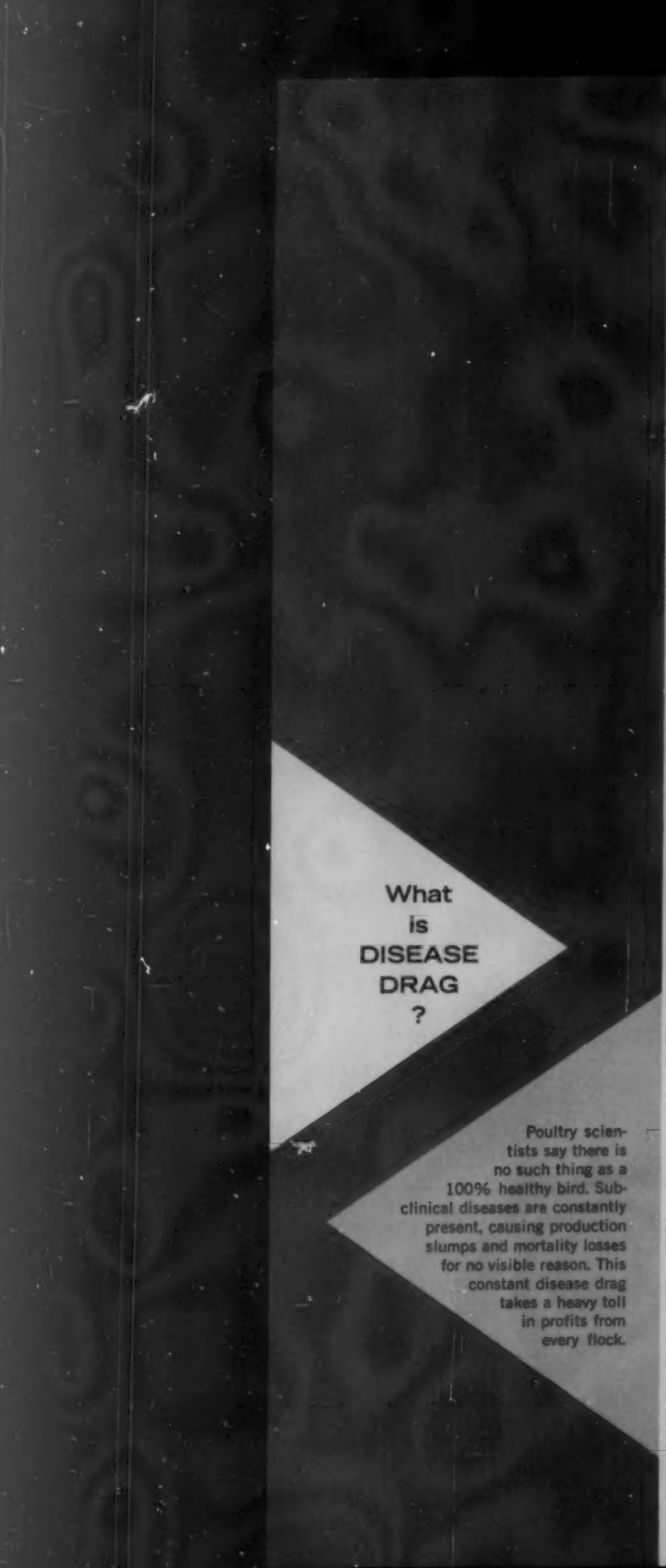
"It is generally accepted that adverse environment and disease may become limiting factors in poultry production; so much so that (they) can completely offset the gains expected from genetically improved birds and modern balanced rations." *Poultry scientist*

Disease limits flock performance

Even the best birds can't produce to the peak of their bred-in ability if disease holds them back. Top-quality feeds are robbed of their power by low-level or subclinical infections. Good management can't compensate for ever-present bacteria. Constant Disease Drag . . . present in almost every flock . . . can prevent you from reaching a money-making ***Full Performance Index***

It's important that you find out now . . .

What is DISEASE DRAG costing you ?



What is DISEASE DRAG ?

Poultry scientists say there is no such thing as a 100% healthy bird. Subclinical diseases are constantly present, causing production slumps and mortality losses for no visible reason. This constant disease drag takes a heavy toll in profits from every flock.

Disease drag is costly. To find out just how much it is costing you, see how your flock measures up to

Full Performance Index

In egg production . . . as in everything else we do . . . there is a "standard of performance" or *index* that separates the winners from the "also-rans."

To find out what marks winning performance in the egg business, we asked men who should know . . . breeders, college poultry specialists and successful poultrymen. We checked winning flock performance in Random Sample Tests, college demonstration flocks, good commercial flocks and USDA averages.

The results are *goals . . . an index of performance* . . . for you to match or beat to consistently make good money in the egg business. These goals are 250 eggs per hen housed . . . a dozen eggs on 4½ lbs. of feed or less . . . at least 90% Grade A eggs . . . and 90% laying-house livability.

These are *practical* goals. The layers you can house today are the finest ever bred. Today's feeds are the finest ever made. And with better housing and equipment, today's management can be the best ever. *But even with the best birds, feed and management, you still may not be meeting these goals. Why?*

DISEASE DRAG is usually the reason. On the following pages, you can estimate what disease drag is costing you . . . and learn how you can head off these losses with germ-killing nf-180.

Compare your flock performance with .....

Full Performance Index

Mark your own flock performance here . . .

What is your average **EGG PRODUCTION** per hen housed? (total eggs for 12 months' lay divided by total pullets)		**250** EGGS PER HEN HOUSED
What is your average **FEED EFFICIENCY?** (total feed divided by total eggs in dozens)		**4.5** LBS. FEED PER DOZEN EGGS
What is your average **EGG QUALITY** in percent of grade A eggs and better?		**90%** OR MORE GRADE A EGGS
What is your average laying-house **LIVABILITY** per year?		**90%** LAYING-HOUSE LIVABILITY

This is what disease drag may be costing you in

EGG PRODUCTION →

This is what disease drag may be costing you in

FEED EFFICIENCY →

This is what disease drag may be costing you in

EGG QUALITY →

This is what disease drag may be costing you in

MORTALITY →

Compare your flock performance with .....

FPI Full Performance Index

Mark the difference between FPI and your own flock performance here . . .

Mark your own flock performance here . . .

With eggs at 30¢ per dozen, 2 dozen extra eggs per layer would increase your gross income 60¢ per bird...$600 per 1,000 layers.

250

EGGS PER HEN HOUSED

Each ½ lb. less feed required per dozen eggs reduces your costs approximately 2¢ per dozen.

4.5

LBS. FEED PER DOZEN EGGS

If you sell 1,000 dozen eggs a week, increasing Grade A by 10% adds at least $200 a year to income.

90%

OR MORE GRADE A EGGS

Each 5% reduction in death loss reduces your costs approximately ½¢ per dozen eggs.

90%

LAYING-HOUSE LIVABILITY

nf-180®

controls more poultry diseases than any other drug

nf-180 is a completely different drug — not a sulfa, not an antibiotic, not an arsenical. It is a man-made chemical . . . nontoxic, does not build up in body tissue, and has no harmful side effects. Unlike antibiotics, which simply hold germs in check, nf-180 actually kills germs *once and for all.* As a result, resistant germ varieties have little chance to develop.

In addition, nf-180 has a "broad bacterial spectrum" . . . it attacks an extremely wide range of diseases. This is why nf-180 is so effective in holding down disease and freeing birds from constant disease drag.

This wide-range effectiveness also makes nf-180 invaluable in *treating* disease. In fact, nf-180 controls more poultry troubles than any other drug you can use, as shown in the chart below. That is why nf-180 is the first drug many veterinarians and trained service specialists turn to when trouble strikes . . . and why so many successful poultrymen rely on nf-180 almost exclusively.

Why nf-180 is the hardest working feed medication of them all

DRUG	Infectious Hepatitis	Paracolon	Coccidiosis in Chickens	Pullorum	Typhoid	Paratyphoid	C.R.D. Sinusitis	Blue Comb	Hexamitiasis	Synovitis	Ulcerative Enteritis	Blackhead	Stress Periods
*nf-180 furazolidone Level (grams)	YES T-200	YES P-100 T-200	YES P-50 T-100	YES P-50 T-100	YES P-50 T-100	YES P-50 T-100-200	YES P-50 T-100-200	YES P-50 T-100-200	YES P-100 T-200	YES P-50 T-100-200	YES P-50 T-100-200	YES P-100 T-200	YES P-50 T-100
Chlortetracycline Level (grams)	NO	NO	NO	NO	NO	NO	YES P-50 T-100	YES P-50 T-100	YES P-50 T-100	YES P-100 T-200	NO	NO	YES P-50 T-100
Oxytetracycline Level (grams)	NO	NO	NO	NO	NO	NO	YES P-50 T-100	YES P-50 T-100	YES P-50 T-100	YES P-100 T-200	NO	NO	YES 50
Bacitracin Level (grams)	NO	NO	NO	NO	NO	NO	YES P-50 T-100	YES P-50 T-100	NO	NO	NO	NO	YES P-50 T-100
Penicillin and Streptomycin Level (grams)	NO	NO	NO	NO	NO	NO	YES 75 Strep 25 Pen	YES 75 Strep 25 Pen	YES 75 Strep 25 Pen	NO	NO	NO	NO
Penicillin Level (grams)	NO	NO	NO	NO	NO	NO	YES T-100	YES T-100	NO	NO	NO	NO	NO
Penicillin and Bacitracin 37½B plus 12½P Level (grams)	NO	NO	NO	NO	NO	NO	YES P-50	YES P-50	NO	NO	NO	NO	YES P-50 T-100

*Each lb. nf-180 Concentrate contains 50 grams furazolidone.
Each lb. nf-180 Custom Mix Ton contains 10 grams furazolidone.

KEY: P — number grams for prevention of disease.
T — number grams for treatment of disease.

fights DISEASE DRAG

helps birds reach.....

Full Performance Index

These poultrymen prove that nf-180 helps make FPI a practical goal

RALPH MANNING

"With good birds, good management and nf-180, a flock owner doesn't get into disease problems," says Ralph Manning of Spencer, Iowa. And his production average of 255 *salable* eggs per hen housed — verified by Iowa State University audit — proves it.

250

EGGS PER HEN HOUSED

JOHN DOVE

"I get better feed utilization by using nf-180," says John Dove, Linville, Virginia. "I use about 27 lbs. of feed per 100 birds per day . . . and my egg production averages 70%. That's 4.5 lbs. per dozen eggs. nf-180 has paid off at low egg prices . . . put dollars and cents in my pocket."

4.5

LBS. FEED PER DOZEN EGGS

A. J. BOONE

nf-180 user A. J. Boone of Waterloo, Nebraska, reports, "All our eggs are double-A grade . . . 150 cases a week . . . and for that reason we get a higher price than the market." He's noticed, too, that nf-180 checks production slumps and keeps birds laying through stress periods.

90%

OR MORE GRADE A EGGS

IAN THOMPSON

"nf-180 held down my mortality to the lowest I've ever had . . . less than 3%," says Major Ian Thompson, Buckingham, Pa. "I've been fortunately free of disease over the last 14-15 months. I honestly believe nf-180 holds down a large number of diseases."

90%

LAYING-HOUSE LIVABILITY

See your FEED DEALER

Here's how to get started

Learn more about the nf-180 way to high steady layer income

Most likely your regular feed dealer can give you further details on this new Full Performance Index program. He can supply a special Flock Performance Inventory chart that gives you a new, better way to check flock performance against your FPI goals. He can furnish a handy Poultry Profit dial that will help you estimate the dollars-and-cents of the nf-180 feeding. This pocket-sized dial also gives nf-180 treatment levels to use for specific troubles.

If for any reason your feed dealer does not have an FPI feed or cannot furnish the information you need, send us his name and address. We'll see that he gets all the facts by return mail . . . and send the same information to you, too.

At pullet housing time: To overcome stress of moving and get birds into full production fast, order a 2-week supply of poultry feed medicated with nf-180 at the "booster" level . . . 2-4 lbs. nf-180 per ton (100-200 *grams furazolidone*). Feed for one week before and one week after housing. Then reduce the level of nf-180 to ½ lb. per ton (25 grams furazolidone) and feed this FPI ration continuously throughout the laying period.

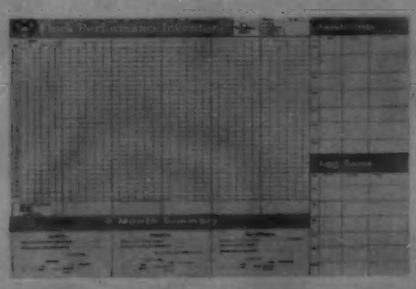
Hens already in production: Clear out the many hidden troubles or stresses which drag down production and efficiency by using nf-180 at the booster level for 14 days. Carefully check what happens to egg production, feed consumption, mortality, and the general vigor of your birds. Depending on the flock's condition, improvements may not show up until the eighth or ninth day. This simple test will show you how much nf-180 can do for your flock. Then continue the protection with an economical FPI ration (½ lb. nf-180 per ton fed continuously in the total ration). You make the test . . . you decide.

FPI

250 EGGS
4.5 Lbs. FEED CONVERSION
90% LAYER LIVABILITY
90% GRADE A EGGS

HESS & CLARK
nf-180®
furazolidone
DIVISION OF VICK CHEMICAL CO.
Ashland, Ohio

Start now to check performance with free chart!



Complete records are absolutely necessary to good profits. This new Flock Performance Inventory chart is the most complete and useful record-keeping method you've ever seen! Easy to use. Lets you summarize results every six months. Shows how to figure feed efficiency. Special sections for recording feed costs, mortality, and egg income. Send name and address today to: Free Chart, Hess & Clark, Ashland, Ohio.

Good birds
Good feed
Modern equipment and management

PLUS nf-180®

the Full Performance Ingredient

Even the best feed can't do the whole job. Good birds by themselves can't work miracles. Even better egg prices won't significantly improve profits in a poorly managed flock.

No one factor alone is the whole answer! Nor is nf-180 the whole answer. But there is ample proof that nf-180 is an important part of the total profit picture. Often it is the margin of difference between just good flock performance and reaching a Full Performance Index.

The reason is simple. Even the best-managed flock of birds can't produce up to its bred-in, fed-in potential if subclinical infections are sapping the birds of vigor and health. This constant disease drag is present in most every flock. nf-180 continuous low-level medication in the feed is the easiest, most effective way known to free birds of constant disease drag. In fact, top poultrymen like Ralph Manning rely on continuous low-level nf-180 medication to insure top flock performance year after year.

Many feed manufacturers now offer a low-level nf-180 medicated layer ration as part of their regular line. Where such feeds are not available, poultrymen are insisting their dealers custom-mix nf-180 in their layer feeds.

APPEARS IN THESE MAGAZINES

LEARN WHAT THIS BIG NEW PROGRAM MEANS TO YOU

Here's why you should...

make this your BIG

nf-180® the Full Potential Ingredient

BLUE BIRD EGG MASH

Medicated

In laying hens, to increase egg production, improve feed-egg ratio, extend egg laying period, maintain greater laying performance during stress, improve hatchability and increase production in the early laying period, when fed as directed on the back of this tag.

ACTIVE DRUG INGREDIENT

Furazolidone (nf-180) . . 0.00275%

GUARANTEED ANALYSIS

Crude Protein, not less than 00.00%
Crude Fat, not less than . . 00.00%
Crude Fiber, not more than 00.00%

INGREDIENTS:

_____
_____
_____
_____

MANUFACTURED BY
COMPANY NAME
CITY STATE
100 lbs. net weight

ADD THESE CLAIMS TO YOUR FEED TAG WITH nf-180 AT THE 25-GRAM LEVEL

The sample tag at left shows the claims permitted for a feed medicated with the low-level of nf-180 (25 grams of furazolidone per ton of total ration). Every one of these claims is backed up by performance data obtained from carefully controlled laboratory experiments and farm feeding trials. nf-180 is permitted in the feed only because it is effective when used according to directions. (Remember, too, nf-180 is safe and nontoxic.)

Equally important to you is the way these benefit claims are endorsed by farm flock and commercial flock men who have used continuous nf-180 low-level feeding. Some of their statements appear below:

EARN CUSTOMER SATISFACTION LIKE THIS

"With good birds, good management and low-level nf-180, I just don't have any disease problems."

"I get better feed utilization by using nf-180, and that's dollars and cents in my pocket."

"We used to replace our hens every 14 months. Now on nf-180 I can keep them a month to 6 weeks longer."

"I figure nf-180 helps my layers through stress periods . . . keeps production from dropping."

"nf-180 gives me higher hatchability from my breeder flock . . . and I get paid on the basis of hatchability."

"Shortly after caging, my pullets were laying 20%. I tested one row of 418 birds with nf-180. In two weeks they went from 138 to 358 eggs per day. The birds that didn't get nf-180 didn't come up as fast and never did go as high."

Feed Promotion Idea in 1960

Here's how you can tie in with the **FPI** *program*

12-MINUTE SOUND FILM FOR YOUR FARMER MEETINGS

Shows poultrymen the importance of setting goals and keeping records to see if they're meeting these goals. Emphasizes importance of good birds, good management, good feed . . . explains how constant disease drag can reduce flock performance. Title: "The Margin of Difference." We'll furnish this sound-strip film without cost . . . ideal vehicle for telling your quality-feed story to poultrymen (excellent for sales and service training sessions, too).

SELLING AIDS AND MAILERS

"Figure-it-out-for-yourself" folder is an ideal tool for salesman to show how constant disease drag reduces the poultryman's profits. Profit Pointer dial shows how nf-180 can boost profits for any size flock, also gives nf-180 treatment levels for specific diseases.

NEW FLOCK PERFORMANCE INVENTORY CHART FOR BETTER RECORD KEEPING

First and only one of its kind! Makes it easy for poultrymen to check egg production, feed consumption, mortality, and salable Grade A eggs against FPI goals each month.

NEW nf-180 SERVICE CENTER

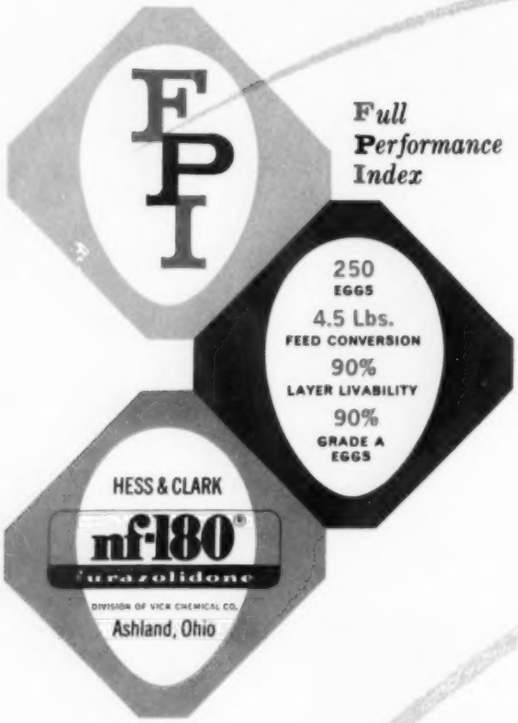
In addition to FPI layer rations, you'll want to use nf-180 for booster feeds, treatment of specific problems (broilers and turkeys, too), and to prevent and treat swine scours. Promote **every** nf-180 medicated-feed use and benefit with this new nf-180 Service Center. Designed for counter or wall use in your dealer showrooms. Contains literature pockets for nf-180 information.

COLORFUL DISPLAY POSTERS

King-size . . . explain FPI goals and spotlight benefits of FPI feeds. Featured center area is reserved for imprinting your own brand name and quality feed story.

FPI EMBLEMS

Reproductions of the three FPI emblems will be furnished for window and wall display. Ad mats of these emblems also are available for use in your layer ration ads. Sample radio spots and news stories will be supplied on request.



FPI...

newest industry-wide promotion idea from Hess & Clark

"'Survival of the fittest' now takes on meaning as 'survival of the efficient,'" says one poultry expert. "The alert poultryman will want to review and analyze his poultry operation each year."

"What's the most important management practice? Set a goal!" says an extension poultryman. "Good management takes the 'luck' out of raising poultry."

This new industry-wide Full Performance Index promotion from Hess & Clark gives all factors (feed, birds, management) their proper emphasis . . . and gives your customers money-making self-improvement goals to shoot for.

Full Performance Index gives you a sound, proven way to help your customers help themselves. *And as you help them prosper, you will prosper!*

Study all the details of FPI . . . look at how many ways it will help you create merchandising excitement . . . how many ways it will help you build tonnage . . . gain new customers. Then let's get together and work out your FPI program for 1960.

Golden Goodness of Eggs

launched by Hess & Clark last year, now well established

In line with Hess & Clark's policy of "first help the customer . . . then he'll help you," the now well-known Golden Goodness of Eggs promotion was launched just a year ago. Now it is well established as a nation-wide program designed to increase egg consumption and improve prices. (FPI works from the other end, helping poultrymen lower their production costs.) Like Golden Goodness of Eggs, the FPI program is destined to have major impact on your customers and the poultry industry as a whole.

both from Hess & Clark

. . . leaders in new products and ideas for the feed industry

Golden Goodness of Eggs and **Full Performance Index** are industry-wide promotions created by Hess & Clark to improve the profit position of every segment of the egg production industry.

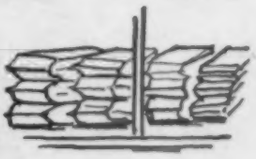
HESS & CLARK
Ashland, Ohio

You save 6 ways when you use CCC Trace Mineral Premixes

Expenses that were once incidental can now be substantial enough to wipe the profit right out of your feed making operation. If you're making your own trace mineral premix, how about checking those costs again—and remember, CCC premixes are the result of exhaustive research in the laboratory, in experimental work in cooperation with leading universities, and in actual use testing. CCC offers you the most advanced and thoroughly tested trace mineral premixes available.

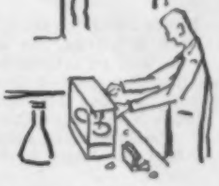
1 SAVE ON MIXING

2 SAVE ON STORAGE



3 SAVE ON INVENTORY EXPENSES

4 SAVE ON LABORATORY EXPENSES



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Hales & Hunter Saves $157,000 Annually Through Plant Improvement Program

By F. C. Bisson
Special Correspondent

In this era of unbalanced federal budgets and the concomitant spiraling national debt (now just a stone's throw away from an astronomical $300 billion), perhaps an annual saving of $157,000 looks rather picayunish—something of a retail proposition.

But when one digs a little deeper and finds that this $157,000 saving is the result of an investment of only $200,000—a return of almost 80%—then it gains significance and, when viewed in its proper perspective, takes rank as a near fiscal miracle.

Long identified with the grain, milling and feed industries, the writer gets a great deal of satisfaction in revealing that this piece of financial legerdemain has been accomplished by a well-known and long established grain and commercial feed manufacturing concern, the Hales & Hunter Co. of Chicago.

Some time ago it became apparent to the firm's management that time, effort and expensive manpower were being dissipated at their 44-year-old feed mill at Riverdale, Ill., on the southern outskirts of Chicago. Intensive research by the engineering firm to whom the management entrusted the assignment revealed not only the desirability but the actually urgent necessity for revamping the plant's distribution system.

Bottlenecks

Close study of the matter revealed the presence of bottlenecks at various points between the ninth floor at the top of the mill structure and the bottom floor, not to mention preventable congestion at the loading platforms, both rail and truck. Some of these bottlenecks were either caused or aggravated by the human element—some were of a strictly mechanical type, and still others were caused by a combination of the other two.

Various pieces of mechanical equipment had to be rearranged or relocated. Substantial and radical changes were made in the intricate belt system, both longitudinal and latitudinal. Individual belts for each packing unit were installed, among other major changes.

Still further advantage has been taken in the use of gravity itself in expediting the movement of the multitude of separate ingredients from where they leave their original storage bins or compartments until they end up completely bagged and tagged on a "take-it-or-leave-it" pallet ready for warehouse storage or for movement to either the rail or truck docks. All of this intraplant movement, incidentally, is done by a fleet of fast-traveling and highly efficient Towmotor forklifts.

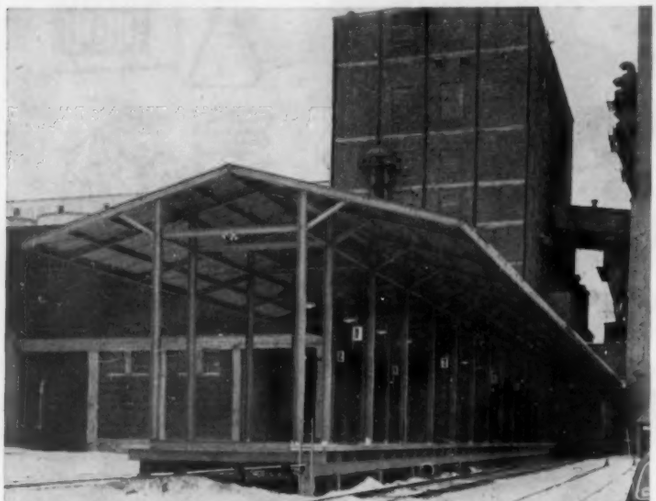
Faster and much more economical loading has been accomplished by making some drastic changes at the docks. The one for rail-loading was given a complete face-lifting job. One old track was removed entirely and in its place, a two-way loading dock was constructed. The two tracks served by this dock accommodate 17 boxcars of 100,000 lb. capacity each and permit loading of sacked feed into more cars at one time than under the old three-track system. There is also another track devoted entirely to the loading of bulk feed.

Another point that should be stressed is that there is absolutely no interference between any of the plant's outbound operations and the handling of inbound commodities whether they are grain or bulk or bagged smaller ingredients or liquids. All ingredients are handled in an area completely apart from the finished product loading operations.

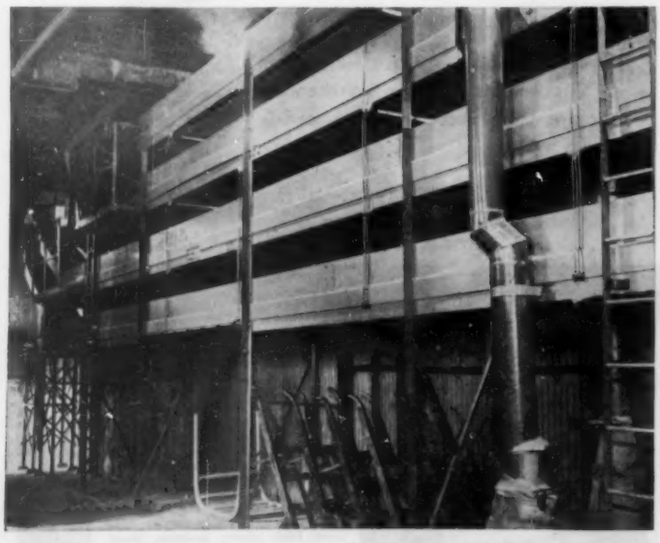
To augment their customer service, Hales & Hunter recently purchased a fleet of delivery trucks equipped to handle their bulk feeds, and it is the feeling of the management that both old and new customers will appreciate their value

AERIAL VIEW—Hales & Hunter's Riverdale, Ill., feed manufacturing plant looks like this from the air. Grain elevator, mill and storage tanks are flanked on the right by warehouses and on the left by offices and shops.

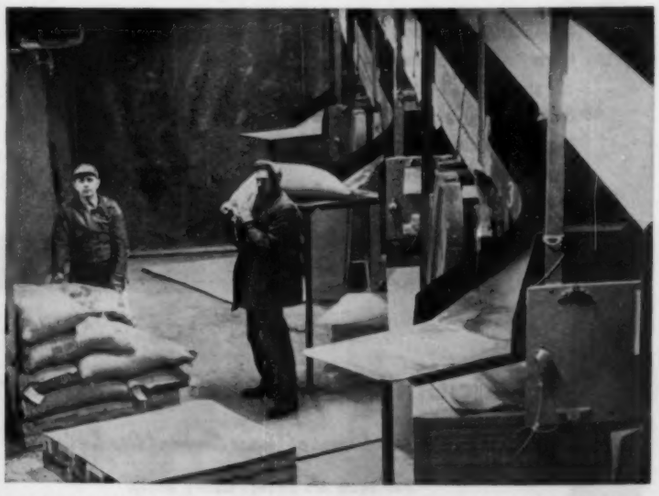
STARTER—William H. Garvey, Jr., president, Hales & Hunter Co., is shown "throwing the switch" in ceremonies marking completion of an extensive modernization program for the company's huge plant at Riverdale, Ill. Left to right are: George Every-Clayton, mill manager; Dr. S. B. Lee, director of operations for the company's seven major Red Comb Pioneer Mills; E. E. Woolman, executive vice president and director of marketing, and Mr. Garvey.



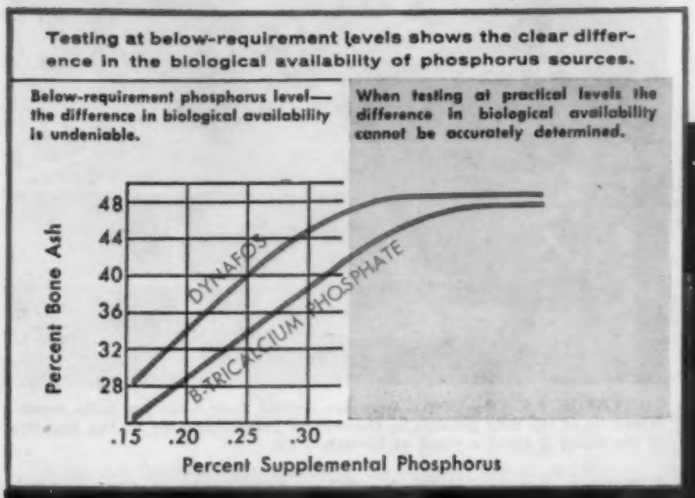
LOADING DOCK—This is partial view of new 17-car loading dock. On the left side of the dock is the bulk car loading track which is equipped with two track scales. At far left, covered with a tarpaulin, is the track entrance to the area for receiving bulk liquids.



CONVEYOR TIERS—Four conveyors with 1,100 ft. of belting carry sacked feed to a centrally located palletizing section where it is stacked on "take-it-or-leave-it" pallets.



PALLETIZING AREA—Workmen in Hales & Hunter plant at Riverdale, Ill., take feed from terminus of conveyor chute and place it on "take-it-or-leave-it" pallets to be picked up by Towmotor fork lifts. The palletizing area is on the first floor of the mill.


Testing at below-requirement levels shows the clear difference in the biological availability of phosphorus sources.
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32
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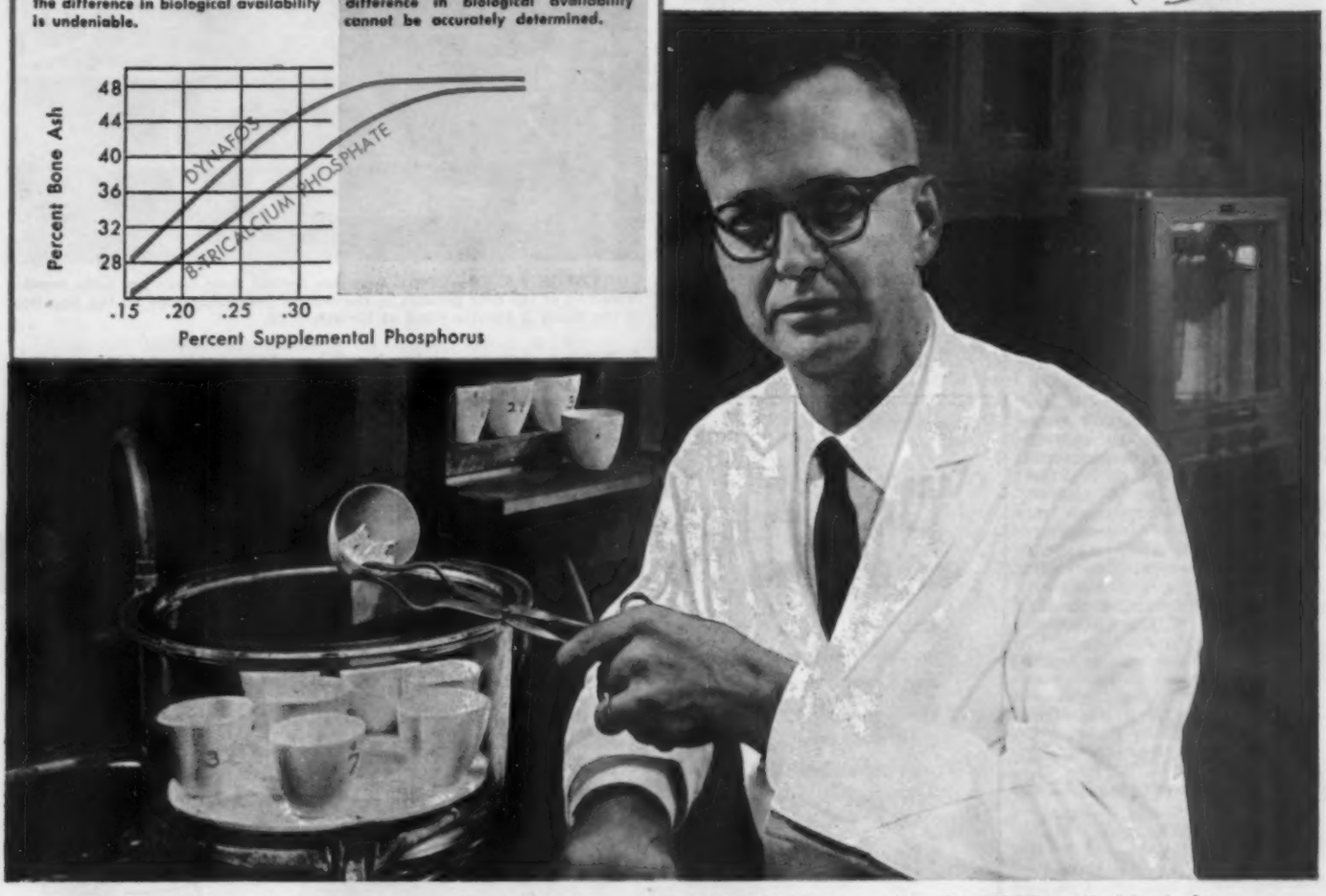

Dr. Herbert Peeler, Director of Animal Nutrition Research at IMC, supervises the "IMC test" of feed phosphate value — the testing technique used to maintain the high biological value of DYNAFOS.

CAN YOU BE "PRACTICAL" WHEN TESTING FOR BIOLOGICAL AVAILABILITY OF PHOSPHORUS . . . AND STILL BE ACCURATE?

The answer is an emphatic *no!*

Testing phosphorus at a "practical" level — that is, comparing test phosphorus sources in typical commercial formula feeds — cannot show the *true difference* in biological availability. That's because the low biological availability of inferior feed phosphates is "covered up" by phosphorus in the test ration.

Only a *scientific* test technique can accurately measure phosphorus value. Each source must be fed at levels *below* the optimum amount required for good health and growth. By adding each phosphorus source to the test ration at several *below-requirement levels,* we can chart biological response curves that show *true* comparisons of nutritional value.

Testing at below-requirement levels — combined with the highly sensitive bone ash method of measuring actual phosphorus utilization by the animal — provides the basis of the *IMC Biological Assay of Phosphorus Availability.* This is the test IMC uses to guard the consistent high biological availability of DYNAFOS — your most valuable feed phosphate. For further information on the test and the product, write c/o the address below. 24-60

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LOADING — Fork lift operator is about to enter empty boxcar from loading dock with pallet-load of "Red Comb" sacked feed.

when other means of transportation run into road blocks of one sort or another.

90 Years Old

Hales & Hunter boasts of a long and colorful history. Although the firm did not enter the commercial mixed feed manufacturing field until 1916 when it built the mill at Riverdale, Ill., Hales & Hunter can trace its grain and allied business operations way back to 1870. This puts the firm within 10 years of celebrating its centennial.

Shortly after the end of the Civil War, Sherman W. Edwards entered the grain and hay business, and in 1883 it became Edwards & Loomis. Some years later, the latter concern was merged with the Kasota Elevator Co. of Chicago and Minneapolis and the Hales Elevator Co. of Chicago under the name of Hales & Edwards. In 1916, the firm name was changed to its present one of Hales & Hunter.

In the intervening years, the firm has had a consistent and healthy growth. Between 1941 and 1956, Hales & Hunter built four feed mills and acquired two others. In 1941, the company built at Wilmington, Del.; in 1948 at Marshall, Mo.; in 1951 at Lexington, Ky., and in 1954 at Cartersville, Ga. During 1956, Hales & Hunter acquired two other plants, one at Springdale, Ark., and the other at Mentone, Ind.

The Riverdale operation has a daily capacity of 1,200 tons and, with the other six plants, Hales & Hunter turns out 3,000 tons of commercial mixed feed each day. The two main brands are Red Comb Poultry Feed and Pioneer Livestock Feeds.

Claims to "Firsts"

Collectively, Hales & Hunter has a rather imposing list of claims to "firsts" in the feed manufacturing business. Among these are: (1) Operated first "continuous flow" feed manufacturing plant; (2) installed first continuous belt to carry sacked feed from packers to boxcars; (3) first feed mill to handle bulk ingredients; (4) first to install and use a hammer mill, and (5) installed the first pellet mill in the Midwest.

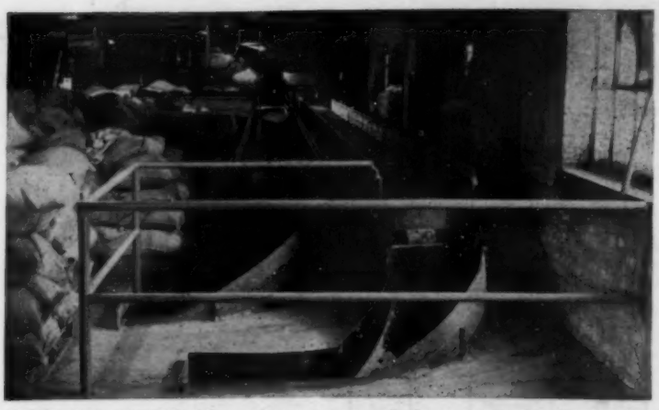
Commenting on the most recent improvement in the plant distribution system at the Riverdale operation, William H. Garvey, Jr., president, said: "We are confident that a large mill of this type will continue to hold an important place in the feed industry. We are equipped to serve a vast network of dealers, many of them of the grind-and-mix type. It has been shown time and time again that the most prosperous grind-and-mix dealers confine their activities to blending concentrates with local grain to make only a few high-tonnage items.

"The balance of the feeds they need to complete their 'line,' the producer-financing programs and the merchandising assistance they require to operate profitably are the responsibility of a 'mother mill.' Our Riverdale plant and our six other modern mills are equipped to assume this responsibility."

Reorganization

Hales & Hunter recently completed a reorganization program by which all of its various companies have been placed into one single unit. In addition to this change, the firm has expanded its directorate by the addition of five well-known people, three of whom who have long been prominent in the business world and two equally prominent in the educational field.

They are: Joseph D. Stockton, vice president and treasurer, Illinois Bell Telephone Co.; L. B. Hunter, vice president, Inland Steel Co.; Harold J. Nutting, chairman of the board, Overseas Industries, Inc., and a retired vice president of Marshall Field & Co.; Dr. Earl M. Hughes, agricul-



CONVEYOR BELTS—Shown here are second floor conveyor belts running from two of the four packers to the central pelletizing area on the first floor of the Hales & Hunter plant at Riverdale, Ill.

Pied Pipers..... of Gr

E. C. SAMUELSON, Grain Manager Trico Feed Mills Minden, Nebraska

"Saved Worry, Turning, and Fumigation Costs"

"We equipped our new 1,000,000 bushel annex with a complete Hot Spot Engineered Aeration System. We also have Hot Spot equipment in our other facilities. Both the temperature and aeration systems have saved us a great deal of worry as well as expense in needless turning and unnecessary fumigation. We are convinced our Hot Spot equipment was a wise investment and rely on it to help guide our storage operations."

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tural marketing specialist and former administrator of the Commodity Stabilization Service, and Dr. Louis B. Howard, dean of the College of Agriculture, University of Illinois. The board also includes the following directors: William M. Hales; William H. Garvey, Jr.; Marion J. Hales, and Edward E. Woolman.

Well fortified by many years of successful business experience, the company is also "long" on youth, virility and adaptability to changed economic conditions. In short, it's a mighty agile and active nonagenarian.

Brokerage Firm

PORTLAND, ORE. — John Blake Hering, a member of the Continental Grain Co., in Portland, recently announced his resignation from that firm. Mr. Hering will begin operation of the John B. Hering Co., a brokerage firm, in May.

In his new business, Mr. Hering will serve as broker for both domestic and export grain.

Southern Industries Reelects Directors

MOBILE, ALA. — Stockholders of the Southern Industries Corp. reelected the present 13 directors at their annual meeting in Mobile recently.

Southern Industries is an Alabama corporation with 11 wholly-owned subsidiary companies, one of which is engaged in the manufacture of oyster shell for poultry.

The directors reelected are: William H. Armbrecht, Jr.; D. E. Dawson, Jr.; Gilbert F. Dukes; R. H. Kriete; James McPhillips; J. E. McRae; Richard Murray; R. H. Radcliff, Jr.; E. A. Roberts; Truman A. Smith; Leon M. Torbert; Marion R. Vickers, and B. R. Wilson, Jr.

Following the stockholders meeting the directors reelected officers. They are: E. A. Roberts, chairman of the board; James McPhillips, vice chairman; A. H. Radcliff, Jr., president; D. E. Dawson, Jr., executive vice president; Leon T. Torbert, vice president and treasurer; Truman A. Smith, vice president and chief engineer; Stewart Thames, Murray Stevenson and W. J. Westerman, vice presidents; Marion R. Vickers, general counsel; Selden S. Kearns, secretary; Kenneth J. Reid, controller; Juanita B. Alford, assistant secretary; Toulmin Greer, assistant controller, and S. A. Davis, Jr., assistant secretary and assistant treasurer.

'Cost of Credit Will Stay High'

WICHITA, KANSAS — "Despite some recent hopeful signs of an easing of the 'tight money market,' the cost of borrowed money is expected to remain relatively high for some time," said Glenn E. Heitz, director of the Cooperative Bank Service, Farm Credit Administration.

Mr. Heitz, while speaking to a farmer cooperative audience, said the chief factor in this situation is the tremendous world-wide demand for credit. Some factors involved here include defense needs, population growth, consumer credit needs, economic growth and government spending.

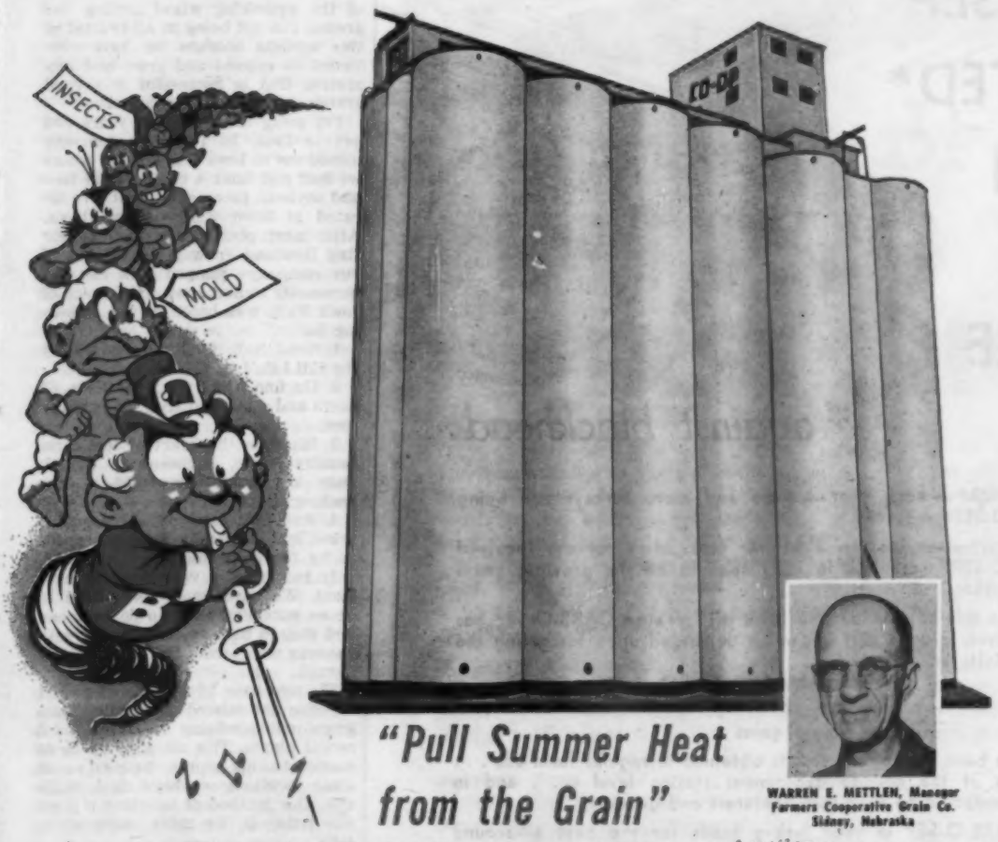
"Farmers and their cooperatives are requiring increasing amounts of capital," said Mr. Heitz, "but the Farm Credit System will have sufficient funds to serve all deserving farmers and their cooperatives at the lowest cost consistent with sound lending.

"Farmers should get on a sound basis and stay there," he added, "for credit cannot substitute for income over the long pull."

"Before we can expand again, J. B., we'll have to acquire more land."

ainland!

If you can reduce the risk involved with your storage operation, and at the same time reduce your operating costs, you will have a better profit picture. Hot Spot Detector Temperature and Engineered Aeration Systems can do just that for you. Hot Spot Temperature systems let you know the moment possible grain damage starts; Hot Spot Engineered Aeration is ready to help stop the damage almost before it occurs. The modern grain man relies on Hot Spot equipment for a sound, businesslike operation. Here are reports from two such leading grain men:



"Pull Summer Heat from the Grain"

WARREN E. METTLEN, Manager
Farmers Cooperative Grain Co.
Sidney, Nebraska

"We have both Hot Spot Temperature and Engineered Aeration Systems in our concrete houses and are completely sold on this equipment. The temperature system tells us when trouble is developing. The aeration system lets us do something about it with very little expense. We are able to pull the summer heat from our grain thus lowering the temperature to a predetermined safe storage level easily and automatically by using the two systems in combination. Lowering the temperature is of vital importance to us because bugs will not breed or become active when the temperature is low. We heartily recommend Hot Spot."

J. D. Forsmo Promoted By Western Condensing

APPLETON, WIS. — Peebles' Specialty Products, Western Condensing Co., has named James D. Forsmo as district sales manager for Illinois, Indiana and Kentucky. Announcement of the appointment was made by Win S. Welch, sales manager.

J. D. Forsmo

A graduate of Western's sales training program, Mr. Forsmo will be responsible for the distribution and sale, through distributors, of Instant Super Calf-Kit, Red Whey Blocks, Pigrow, Confetti-Way and Turkey Tone.

Mr. Forsmo has been working in a sales capacity since graduating from the University of Wisconsin in 1958.

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Vita D that will not decompose when combined with minerals.

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Vitamin D-2 or D-3 in dry, oil or water dispersible forms.

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Stable dry vitamin A products.

BHT
Oil soluble Vitamin protector and pigmentation aid.

HYDROPOID
Dry, free-flowing partially hydrogenated animal fat.

XANTHOPHYLL CONCENTRATES
For better poultry pigmentation.

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Effective dog food deodorant.

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Transportation Is Basic Consideration In Choosing Feed Plant Site

"Today's businessman is interested in the lowest delivered cost of feeds. . . . He doesn't care if this cost is achieved by using rail, barge, truck or helicopter."

By H. N. Johnson
Ralston Purina Co.

When I went with the Ralston Purina Co. in 1925, we had six manufacturing plants. The first plant was located in St. Louis in 1894 . . . this makes the company 66 years old. Other plants soon to be founded included Nashville, 1913; Buffalo, 1914; Fort Worth, 1918; Minneapolis, 1924, and Kansas City, 1925.

I mention this because you will note that these mills are all at terminal grain markets, and it was for that very reason that we chose these locations. All of the grain and grain products originated in territories adjacent to these markets and the flow was orderly from producing area to consuming area via the monopolistic Iron Horse. Customers would, and did, put up with the rates granted them by the railroads, and were content to receive their shipments from far away points and by rail.

The system that was in effect was a good system. Truck and barge competition was unknown, grain and grain products originated in the mid-west, and the east and southeast were very definitely deficit areas. Under such an arrangement rates could be high, markets equalized and service slow. Our country grew and prospered, and things were neat and orderly. Not so today. Today's customer is a wide-awake, aggressive businessman who knows that slow service makes him carry high inventories and that it costs at least 5% to have money tied up in inventory. He is not the least interested in the Hoch-Smith resolution of 1925, which resulted in the famous rate investigation No. 17,000. He is not interested in preserving the rate break principle, nor in the sanctity of the various Boards of Trade around the country. He is interested in the lowest delivered cost of feeds at the ultimate destination, which is the farm. He doesn't care if this lowest delivered cost is achieved by using rail, barge, truck, or helicopter, and he buys accordingly.

EDITOR'S NOTE: H. N. Johnson is general traffic manager for Ralston Purina Co., St. Louis. This article is from a talk he gave at the second annual Agriculture Industries Forum held at the University of Illinois.

With those remarks, let me back up a little. When we first started expanding (we now have 66 manufacturing plants in the U.S., Canada, Mexico, Cuba and South America), we did so very slowly, and only as pressure for our products built up.

I am sure that our first expansion was triggered by our sales department as they saw a need. And I am of the personal opinion that the sales manager that was the most eloquent, and the most vociferous in his demands, was the sales manager that got the new plant in his territory.

In other words, it was the old story of the squeaking wheel getting the grease. I'm not being at all critical of this method because we have continued to expand and grow and any system that is successful is a good system as far as I am concerned.

I'm going to skip a few years and get to 1942. In 1942, my company moved me to Iowa Falls, Iowa, where we had just built a combination feed and soybean processing plant. We located at Iowa Falls on this basis. After much preliminary planning our Ray Rowland (now president of our company) jumped in a car and personally toured Iowa. His choice of Iowa Falls was based on the following facts:

1. Good rail facilities—served by the C.R.I.P., I.C., C.N.W.
2. On fine highways—Hwy. 65 north and south and Hwy. 20 east and west.
3. Right in the heart of fine farm country—Corn, soybeans in abundance and customers right in our backyard.
4. Available land at a reasonable price, and a friendly feeling towards us by the community.

It has been a very fine arrangement. We have found Iowa Falls to be an excellent place to do business, and they in turn are very happy with the way we operate and they like our payroll.

We now have 56 feed plants and 11 soybean and oilseed plants plus some grain merchandising elevators and 5 cereal plants. This all adds up to 66 manufacturing plants, because at some locations we have dual facilities. Our method of selecting a plant site today is, we think, quite scientific.

Selecting a Site

We have a milling expansion committee headed by David Grant, vice president of manufacturing. On this committee, we have a representative from traffic, buying, pricing, sales and engineering. This committee meets regularly and discusses requests for new facilities. Facts relative to animal and poultry population are furnished so that we may have an idea

again last year . . .

MORE TURKEYS WERE CARB-O-SEP PROTECTED* THAN EVER BEFORE

*against blackhead

That's right — each year — more and more turkeys are being CARB-O-SEP-protected.

1959 was — in fact — a banner year. More turkeys received CARB-O-SEP protection in 1959 than in all the previous years put together.

Why has this happened? We think it's because CARB-O-SEP has conclusively proven that it can be depended upon for giving the best results in:

—blackhead protection
—feed efficiency
—weight gains

This has been true of the results obtained in regular farm use . . . in tests at the college experiment station level . . . and in tests conducted by feed manufacturers and growers.

Put CARB-O-SEP in your turkey feeds for the best all-around blackhead protection **and lowest turkey production costs.**

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of the total potential. (We feel that we will be able to get our fair share of any available business.) Tax rates, labor rates, availability of water and utilities are discussed. Railroad and highway facilities are gone over very carefully. Waterways have become increasingly important and we have included them in our study. In 1957, we did locate a plant at Guntersville, Ala., and have made good use of the Tennessee River. My own observation is that a water location is becoming less important each day as the railroads have come to recognize the threat of water competition, and as they publish through one factor rail rates that fully meet the competition of truck-barge-truck rates.

Recent examples of this method of rate making are the overhead through rates on soybean meal from Western Trunk Line territory into the Southeast and the overhead through rates on alfalfa meal effective Dec. 1, 1959, from Western Trunk Line territory to the Southeast. Because the general theme of this symposium is transportation, I will spend some time in discussing truck, water, and rail transportation.

If we are going to be practical businessmen, I think we must concede that a strong network of railroads is essential to our industries. We know that in times of national emergency, we have a lost cause without them. There just are not enough trucks, planes, and barges to handle the movements of troops and supplies in the numbers and quantities needed. Unless we are satisfied with the idea of the U.S. government taking the railroads over and charging all the deficits to us in the form of taxes, what is the answer?

The railroads have a lot of good executive talent and they should be able to figure out the answer for themselves, but everyone feels qualified to tell the railroads how to run their business, so why should I be an exception.

How many times have you heard a railroad man tell you that "railroads are the low-cost form of transportation," and then when you have checked a rate on grain you have found that the rail rate was two and, yes, as much as three times as high as you could move it by truck or water?

Railroads' Dilemma

I have been back in the traffic department only four years now, but they have been action-packed years. The railroads were in financial trouble back in 1956, so they decided they needed higher rates. In March, 1956, they were granted an ex-parte general increase, and we know this as ex-parte increase 196. When they raised their prices, they made it that much easier for competing modes of transportation . . . and they lost that much more revenue. They needed more, not less, money so they decided that the way to get more money was to raise the price of their services again. So, in December, 1956, we had another general increase and this we now know as ex-parte increase 206. We also had X-206-A, and then because they lost more business and more revenue, they decided that another increase was what they needed. They raised their rates again and we had X-212. Finally, some railroad executives decided that something was wrong, so they appointed research committees to study the situation. These committees called on shippers and receivers all up and down their line (they called on us), and they found out that besides spotty service and poor equipment, their rates were too high. I'm not being facetious; this is what actually happened.

In fairness to the railroads, they have been studying rates and they have taken action in many cases. I am not going to take your time to discuss each territory, but I am sure that you know that rates on soybean meal and grain have been drastically reduced in almost all parts of the country except the east. And the railroads have been able to recapture much of this business. In many cases, it has meant cutting their "normal" rates in half.

Strangely enough, after all the new scales have been introduced we find that we, in most instances, get back to about the X-168 level of rates which were in effect in 1949. In other words, the general increases X-175, X-196, X-206, X-206-A and X-212 did not, at least in the case of grain, grain products, and feed, increase their revenue. Instead, they depleted their revenue by providing a bigger and better umbrella for their competition.

The Cheapest Method

The final measuring stick of whether or not a rail rate is too high is whether or not an industry can either get it done cheaper by someone else or can do it cheaper itself.

As you are all aware, the economy of the country has been changing these last 10 years. In the South,

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WINS TWO "FIRSTS" IN FIRST SHOWING!

The Weimaraner pup shown above won first place ribbons for best of class and best of breed in his very first showing—the AKC sanctioned Kankakee Kennel Club Show on March 13, 1960.

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Whether you make dog food in dry, wet or biscuit form, you can easily incorporate DDF into your present formula. Simply add it at a five per cent level.

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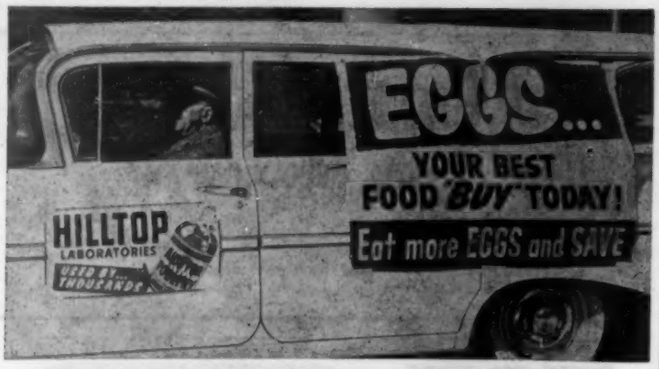
"NAME THE PUP" CONTEST

Winners in Western Condensing Company's "Name the Pup" Contest will be announced at the 1960 American Pet Food Institute Convention, Sept. 8 and 9, at the Drake Hotel in Chicago.



EGG PROMOTION EFFORT—Hilltop Laboratories in Minneapolis is taking part in the promotion of consumption and sale of eggs to the consumer. "Eggs . . . Your Best Food Buy" banners on yellow canvas are attached to many cars in the upper Midwest area encouraging the public to eat more eggs. This promotion program is said to be only one of several "helper campaigns" for the poultry industry undertaken this spring by Hilltop Laboratories.

as an example, it used to be that cotton and tobacco were king, and feed ingredients had to be shipped in. Today many areas in the South grow enough grain for their own needs. My company has felt that it was smart to decentralize our plants so that we could make use of lower-priced locally grown grains, and so that we could serve promptly a territory around each mill.

I don't know why customers are this way, but when they want an order they want it right now. With all of our planned economies, no one has been able to convince the customer that he isn't right. We think the customer is right, and we aim to please him. In fact, we know that we must please him or we won't stay in business.

To summarize, we locate a new plant at a certain point for many compelling reasons. Not the least of these is transportation. Our transportation bill last year was right at $44 million so you can be sure that our executives want to know that we are spending only what is absolutely necessary on this facet of our business. We must be able to serve our customers promptly and efficiently. To do this we must be served well by all modes of transportation. They must be sympathetic to our needs, and to the needs of our customers.

We want to locate on railroads that have a reputation for giving good service, and who are alive to the needs of our industry. For instance, we operate at all of our plants on a milling-in-transit basis. If a railroad lowers the rate on our ingredients to our plant but does not carry through with the proper milling-in-transit arrangements, this railroad is, in effect, telling us that they are interested in the haul to our plant but that from there on we should give it to the trucks.

When this happens, we often find it to our advantage to truck the ingredient from its source to our manufacturing plant also. We might add that most railroads are very cooperative and find it to their advantage as well as ours to be competitive from point of origin of the ingredient to the final destination. If a manufacturing plant is to be located so that it may yield a reasonable profit and adequately service its customers, many things must be considered. Transportation facilities are high on the list. I quote from the creed of the Transportation Association of America—"The industrial might of this country has grown because the individual, in an atmosphere of economic freedom, has available to him such important advantages as the largest and most efficient transportation system in the world, which permits him full marketing and distribution of his products. Therefore, the continued growth of our industries is directly related to the health of our total transportation system."

Purina to Expand Battle Creek Plant

ST. LOUIS—Construction work at the Ralston Purina Co. plant in Battle Creek, Mich., will commence in the near future to add major manufacturing and warehouse facilities, it has been announced at Purina headquarters in St. Louis by David L. Grant, manufacturing vice president.

Two tracts of land totaling approximately 3½ acres adjacent to the Purina property have just been purchased from the city of Battle Creek. The new buildings will be erected on this land. The facilities are scheduled to be completed by early summer of 1961.

The new construction will approximately double present warehouse space and will add some 50% more manufacturing space. It will make possible the manufacture of Purina Dog Chow and other products not now manufactured at the Battle Creek plant.

"The expansion was made necessary by the continuing growth of Purina Dog Chow sales, already first nationally in dog food sales," Mr. Grant said.

Feed Man Dies

WAPATO, WASH. — Kenneth M. Logan, owner of a local feed store and mill, died recently in a Seattle hospital, where he had been under treatment for a week. His condition was not known to be critical and his death was a surprise.

He had been ill for more than a year of a heart ailment which was attributed to an attack of rheumatic fever he suffered as a boy.

In 1938, he became a partner of his uncle, C. D. Logan, in the Logan South Yakima Feed Store & Mill. He was sole owner and manager for the last 15 years.

In 1950, he and his brother, Wilbur, established the Logan Seed Co. plant.

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CYANAMID

Oregon State Beef Cattle Day May 18

CORVALLIS, ORE. — New feeds and feeding practices will be spotlighted at the second annual Beef Cattle Day May 18 at Oregon State College.

The program will open at 9 a.m. in Withycombe Hall, according to Dr. J. C. Miller, head of the college's department of dairy and animal husbandry. During the day, OSC animal scientists will report on recent research projects on the value of various protein and mineral feed supplements, feeding performance of different forms of wafering and pelleting of feeds, and effects of varying levels of grain supplements during the fattening period.

Out-of-state speakers will include Dr. A. J. Wood, professor of animal nutrition at the University of British Columbia, and Bob Norrish, Armour's Livestock Bureau, Chicago. Dr. Wood will report his experiments using industrial by-products and low-grade feeds in Canadian beef-feeding trials. Mr. Norrish will outline the meat packer's interest in beef cattle improvement and explain what his company is doing to improve beef breeding herds.

Talks by OSC staff members on the economic outlook for the beef industry during the coming year, beef disease problems and range management practices will also be given.

Main speaker at an evening buffet dinner will be C. W. McMillan, vice president of the American National Cattlemens Assn., Denver.

Firm Elects Officers

IOWA CITY, IOWA—Stockholders of Protein Blenders, Inc., at their annual meeting reelected C. Urban Kelly, chairman of the board; Charles U. Kelly, president; Charles Gorrell, assistant to the president, and William I. Cushing, vice president, to the board of directors.

Charles Kelly gave his annual report on the operations of the company and its subsidiaries. He also announced that William R. Robison had been elected assistant treasurer.

C. C. Smith Promoted At St. Regis Paper Co.

NEW YORK—St. Regis Paper Co. announces the appointment of C. C. Smith as district sales manager of the Cleveland sales area of its bag division. This area includes northern Ohio and western Pennsylvania. Mr. Smith has been bag division sales representative of the Cleveland sales area.

He has also been engineering manager for the bag division in Birmingham, Ala., and a bag salesman in the Pittsburgh area.

Fred LeFaivre is sales representative in the Cleveland area of the bag division and reports to Mr. Smith.

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Murphy's Announces Mineral Product That Combats Pig Anemia

BURLINGTON, WIS. — Murphy Products Co. has announced a new mineral product which combats baby pig anemia. The product, which pigs are said to eat at a very early age, provides supplemental iron, certain other minerals deficient in sow's milk and vitamins.

The product, called "Baby Pig Minerals," was developed and tested by Murphy's and used successfully for more than a year on more than 150,000 pigs on midwest farms, according to Dr. Robert R. Spitzer, company president.

He said the product is a blend of more than 20 nutrient substances that pigs need during their first few weeks of life. "Especially important," he said, "is the addition of extra high levels of blood-building minerals, such as iron, copper and cobalt, along with vitamin B_{12}. We also include cane sugar and three milk ingredients to increase palatability.

"Development of Baby Pig Minerals stemmed from earlier research at Purdue University," Dr. Spitzer said. "Studies there showed that pigs responded quickly to iron and copper in the ration—both in increased gains and higher blood hemoglobin levels.

"With this in mind, Murphy's research group, headed by E. H. Spitzer, set out to devise a method of getting the necessary ingredients into a feed that baby pigs would eat. The result is the new product, which pigs start eating within three or four days after farrowing.

"The mineral should be placed in the creep area immediately following farrowing . . . Recommendations call for it to be fed until weaning, and when fed as directed, total cost runs about 16¢ per pig."

Wenger Appoints Sales, Service Representative

SABETHA, KANSAS—Dick Lucas, Peoria, Ill., has been appointed sales and service representative for Indiana, Illinois and southern portions of Michigan and Wisconsin, by Wenger Mixer Manufacturing Co., Sabetha.

Dick Lucas

A native of Minneapolis, Mr. Lucas previously worked seven years with Walnut Grove Products Co., where he served as plant manager of the Atlantic, Iowa, plant, and more recently was with Allied Mills, Inc. He will continue to reside in Peoria.

Grain Firm Buys 13,000 Acres in Kansas

HARRISBURG, ARK.—The Morrison-Quirk Grain Corp., Hastings, Neb., has announced the purchase of some 13,000 acres of farmland from Tschudy Farms, Inc., Kansas City.

The land, which includes 8,500 acres of cropland, 600 acres of second-growth timberland and 4,000 acres of floodway, is located in Poinsett County, near Harrisburg.

Officials did not reveal the purchase price of the farm, but local real estate operators familiar with land prices said it probably was in excess of $1 million. Some estimated it was near the $2 million figure. The land has been used primarily for soybeans and cotton in the past.

The transaction makes Morrison-Quirk one of Arkansas's largest farm operators, and brings to more than 33,000 acres the firm's holdings in the state. In October, 1959, the grain firm purchased 20,000 acres near Osceola, Ark., for an estimated $1,500,000.

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FEED ADDITIVES AND THE PIONEERS

"Man is asking man to guarantee something that even God does not guarantee us from one day to the next. . . . We must not set unachievably rigid regulations that throttle research."

By Dr. M. L. Scott
Cornell University

Progress in the development of feed additives has approached a standstill. This has occurred at a time when we all realize that even greater scientific advancement in all fields must be made if we are to continue our high standard of living and our position of leadership in the world.

For approximately three hundred years, Americans have been justly proud of their pioneering ancestors, and have continued to be pioneers in all fields of endeavor, including the field of science. The word "pioneer" and the word "security" are opposites. As soon as one begins to think more about security than he does about pioneering, his progress comes abruptly to a standstill. It is our duty to ourselves and our heritage to continue to make progress and to pioneer in all fields, especially in science.

The objective of this report is not to discuss the legislation which has brought about the marked cessation of efforts in regard to scientific progress in the field of feed additives, but rather to discuss the feed additives themselves in terms of the extent to which they represent "pioneering" and in terms of the extent to which they threaten our "security." The scientific evidence strongly indicates that each of the widely adopted additives has made a definite contribution to our standard of living and our well-being, and that the legislation which has occurred has not been brought about because of evidence of severe deleterious effects of any of these additives; not because of strong or even weak indications of impending dangers from the uses of these additives, but because of the fact that **no man is able to absolutely guarantee, without a question of a doubt, that these additives are absolutely safe in all respects and absolutely secure, and that therefore persons eating animals receiving these additives are absolutely secure.** Man is asking man to guarantee something that even God does not guarantee us from one day to the next.

Low-cost Poultry Meat Brings High Nutritional Values to Millions of Low-income People—Thanks to scientific pioneering in the fields of poultry breeding, poultry management and poultry nutrition, poultry meat costs no more today than it did during the depression years before World War II. Broiler production has increased from about 75 million annually during the 1930's to over a billion; turkey production has increased from 30 million to over 80 million in the same period.

Nutritional studies have shown eggs and chicken and turkey meats to be exceptionally good sources of high-quality protein, necessary vitamins, and to be low in calories. Furthermore, poultry meat is now sold almost exclusively as eviscerated, oven-ready or cut-up, neatly packaged products prepared in modern, sanitary dressing plants under careful supervision.

These achievements have been made in spite of the fact that the poultryman must pay artificially-high prices for his poultry feeds due to government programs which have insulated the prices of grains and certain other feedstuffs from the law of supply and demand while the prices paid by consumers for poultry meats and eggs are completely subject to this law.

Research in Poultry Nutrition—Research in poultry nutrition has made it possible to produce a 3½ lb. broiler in 9 weeks on 8 lb. of feed as compared to a 3 lb. broiler in 12 weeks on 12 lb. of feed, which was the practice in the 1930's. The research discoveries responsible for this are: (1) A better understanding of the importance of a high energy level in the diet; (2) proper balancing of the protein level; (3) supplementation with vitamins and minerals where needed; (4) protection of nutrients from destruction and loss by oxidation, or by competitive action of parasitic bacteria, coccidia, worms and other organisms in the intestinal tract; and (5) discovery of substances capable of altering the animal metabolism in

Dr. Milton L. Scott

AUTHOR—Dr. Milton L. Scott has been a member of the faculties of the department of poultry husbandry and the school of nutrition at Cornell University, Ithaca, N.Y., since 1945. Dr. Scott received his B.A. degree in biochemistry at the University of California and his Ph.D. degree in nutrition in 1945 at Cornell. He remained on the research and teaching staff at Cornell where he was promoted to associate professor in 1947 and full professor in 1953. He has worked on the nutritional factors required by turkeys, chickens, ducks, geese, pheasants and quail and has also studied various biochemical processes necessary to proper metabolism. Dr. Scott is the author of more than 60 scientific publications in the field of nutrition and holds membership in several scientific societies. In 1952, he received the American Feed Manufacturers Assn. award for outstanding contributions to poultry nutrition research.

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To better satisfy the needs of our customers, the Thompson-Hayward Feed Chemical Division maintains a skilled and highly-qualified staff of feed nutritionists. Constantly in touch with the numerous research programs being conducted by colleges and universities across the nation, this nutritional staff stands ready to supply any necessary information or consultation concerning state feed laws, disease control, specialized feed formulation. It is the sole purpose of this staff to help you manufacture better feeds through more effective use of feed additives. You are invited to take advantage of this service.

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a desirable manner. To achieve these advances, we have developed a number of important accessory factors which have come to be known as the feed additives.

Feed Additives Play Specific Roles in Aiding Animal Nutrition—All nature is a never-ending battle between forces trying to build and those bent on bringing about destruction. Most of the feeed additives can be classed as substances whose usefulness comes from their ability to deter some destructive force or forces. Examples of this are as follows:

(1) Antioxidants. In order to build poultry diets of high energy content, it was necessary to make use of waste animal and vegetable fats in these diets, since fats are highly concentrated sources of food energy. However, fats are very unstable and are readily subject to easy destruction by the oxygen in the air, especially when mixed with certain minerals as is necessary in a poultry diet.

Thanks to the pioneering efforts of many researchers in the petroleum, synthetic rubber and other industries, numerous chemical compounds were known to be capable of greatly deterring this oxidative rancidity in fats. These compounds are known as antioxidants. Further pioneering in biological research soon showed which of the antioxidants were useful as feed additives, which were safe for use and which might be a threat to our "security."

Out of this work so far has come Butylated hydroxy anisole and toluene (BHA and BHT) and 6-ethoxy-1,2-dihydro - 2,2,4 - trimethylquinoline (EMQ, Santoquin) as safe antioxidants. Diphenyl - p-phenylenediamine (DPPD) has been shown to cause reproductive disturbances in female rats and therefore a threat to security, and because of this it is not used as a feed additive.

These antioxidants not only protect feed fats from oxidation, they also protect vitamins A, D, and E, thereby greatly decreasing chances of deficiencies of these nutrients. The use of antioxidants has revolutionized the fish meal industry, by furnishing the ways and means for preserving the fat present in the fish meal which previously was allowed to completely deteriorate by "heating" in large stock-piles so that it wouldn't heat in the mill or in transit and cause destructive warehouse fires. Since the "heating process" injured the protein value of the fish meals, the use of antioxidants not only has preserved greater energy value but also greater protein value and, at the same time, helped to reduce the cost of fish meal.

Further pioneering with antioxidants in the manufacturing of other feedstuffs such as rice bran, full-fat soybean meal, etc., will undoubtedly produce further benefits.

(2) Balancing of the protein level with methionine. The U.S. is very fortunate to have climate and soil conditions conducive to excellent yields of high-quality soybeans. Soybean protein, properly processed, contains in proper proportions, all of the essential amino acids required by animals except for a slight deficiency of methionine. This has been no problem, however, because even before the economic importance of this slight deficiency was fully realized, pioneer researchers had developed a low-cost process for making synthetic methionine. A series of studies conducted over the past five years in our laboratories demonstrates that the addition of 0.5 to 1.0 lb. synthetic methionine per ton of practical broiler ration may improve efficiency of feed utilization as much as 10%.

(3) Synthetic vitamins and trace mineral supplements. Practical rations without special supplementation, usually contain sufficient amounts of all of the vitamins and trace minerals except vitamins A, D, E, K, riboflavin, niacin, pantothenic acid, choline and vitamin B_{12}, and the trace minerals, manganese and zinc.

The discovery that the addition of about 50 parts of pure manganese sulfate per million parts of feed would prevent a crippling leg disorder known as perosis was one of the major contributions that allowed the development of the broiler industry to today's proportions. Another equally important discovery in the 1930's was that special riboflavin supplements are needed. The cost of supplying these in the form of such materials as dried skimmilk or dried buttermilk would be exorbitant today.

Fortunately, however, the chemical pioneers have succeeded in synthesizing riboflavin at a cost so low that a few pennies' worth provides all the riboflavin needed in a ton of feed. The story is repeated with vitamin A, vitamin K, niacin and other vitamins.

Although a few uninformed, self-styled "nature doctors" may preach that "natural" vitamins and other nutrients are superior to synthetic vitamins and other nutrients, they have no evidence to support these

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Here's how Monsanto's new, smaller urea micro-prills distribute evenly throughout the feed . . . deliver top performance.

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Select the belt that's best for every job. This new booklet gives you details on eight different brands of belting specifically designed for the grain industry. Mail this coupon now to get your free copy.

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irresponsible claims. The scientific evidence shows the synthetic vitamins and amino acids in use today to be identical in biological usefulness with their natural counterparts.

(4) The coccidiostats, antibiotics and arsenicals. Medical science admits that recent pioneering research on the wonder drugs has brought forth weapons against disease beyond all dreams of a half-century ago. While these drugs have vastly improved our over-all "security", they, as the rose has its thorns, also may pose certain threats to security. In disturbing the "biological balance" in an environment, one must be certain that he is not ridding the area of one pest only to allow a competitive, more destructive pest to thrive.

Since poultry are now being produced in large groups of tens of thousands per group, it is most efficient to administer medical treatment via the feed. For approximately 10 years, researchers in colleges and industrial laboratories have conducted countless experiments on the effects of these drugs in diets for poultry and other farm animals.

The results of these studies have shown that low level feeding of an antibiotic (2-15 grams of antibiotic per ton of ration) causes a growth stimulation without showing any measurable amount of antibiotic in the blood stream or in any of the tissues of the animals. Numerous studies on the arsenicals used in animal feeding have shown that when fed as recommended by the manufacturers these drugs also cause growth stimulation and other desirable effects without threat to our security.

The use of coccidiostats and the use of therapeutic levels of the antibiotics represent medicinal uses and the levels needed in a particular feed to combat a specific disease or diseases for which the drug is intended should be dictated by research veterinarians. Plentiful evidence over a period of years demonstrates that this usage of these drugs is safe and represents no threat to our security.

(5) Substances capable of altering animal metabolism in a desirable manner. Diethylstilbestrol. Diethylstilbestrol is a synthetic compound having female sex hormone properties. Supplementing the diet of fattening steers with very small amounts of this substance produces a marked increase in growth of meat tissue. Its use in poultry causes increased fattening and improved "finish," especially in male roasters.

Hormones are body regulators which have the ability to alter the action of certain enzyme systems. Apparently, under certain conditions, excess female sex hormone has the ability to cause usually-normal cells to undergo the wild cell-growth which we refer to as cancer. Certainly, until this effect of the female sex hormone is better understood, it would be foolhardy to risk the danger that this material, under certain circumstances, may cause to our security. This is the reason for the action by the Food and Drug Administration in removing those uses of diethylstilbestrol (implantations of chickens) which might, through human error, allow appreciable amounts of this hormone-like substance to get into the food supply. Undoubtedly, pioneers in the field of cancer research are investigating this effect and through its very action may find a key to the reason for cancer.

Other hormone-like materials, such as iodinated casein and synthetic thyroxine, are being shown to produce specific desirable alterations in animal metabolism and composition without any untoward effects whatever. In this field lie many possibilities for improvement of health and standard of living, if the willing pioneers are given a chance to explore them.

All manufacturing, production and processing require scientific quality control, especially the diverse areas of food production—control in nutritional quality, wholesomeness and sanitation, in freedom from toxic or dangerous microorganisms, products of microbial activity or adulterants.

It is this part which comes under the supervision of the Food and Drug Administration. This agency has done an excellent job of administering its quality control. The Food and Drug Administration needs the help and cooperation of all to insure that we do not take foolhardy chances with our security. On the other hand, it is equally important that we do not dogmatically set such unachievably rigid security regulations that pioneering is throttled.

Large Crowd Expected At APHF Meeting

MEMPHIS, TENN.—Twin bedroom accommodations at the Hotel Peabody are "sold out" for the 44th annual APHF American Poultry Congress and Exposition in Memphis, July 19-21, according to information released by the Memphis convention bureau.

This early sell-out of "twins" indicates a large crowd for the APHF meeting. Last year, in St. Louis, 4,193 persons attended the meeting.

Hotels with 100% air-conditioning in Memphis are the Peabody, Claridge, Chisca, King Cotton, William Len, Tennessee, Gayoso and Parkview. The Adler is partly air-conditioned. Motels close to downtown and 100% air-conditioned are the Downtowners, Travelodge, Town Park and six Holiday Inns. Room reservations are booked on a first come, first served basis.

For reservations, write the Memphis Convention Reservations Bureau, APHF, P.O. Box 224, Memphis 1, Tenn.

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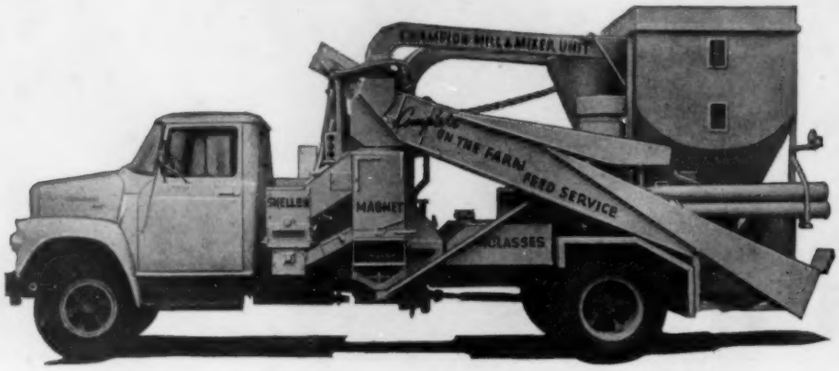
For the Finest in Mobile Equipment . . .



Simple design—Rugged construction—Low-cost maintenance

STANDARD EQUIPMENT—
- Direct drive, 332 cu. in. engine-driven mill.
- 14-ft. swinging drag feeder.
- Permanent magnet located *ahead* of grinder.
- 2- to 3-ton mixing capacity.
- 15-ft. swinging discharge auger.
- Low, wide concentrate hopper.
- 2- to 3-ton concentrate carrying capacity.

OPTIONAL EQUIPMENT—
- GMC Diesel direct-drive power.
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Champion's 2 to 3-ton carrying capacity of bagged concentrate can be dumped directly into the mixer through the platform concentrate hopper. This eliminates extra handling on the part of the operator, and also eliminates the need for an extra ingredient truck.

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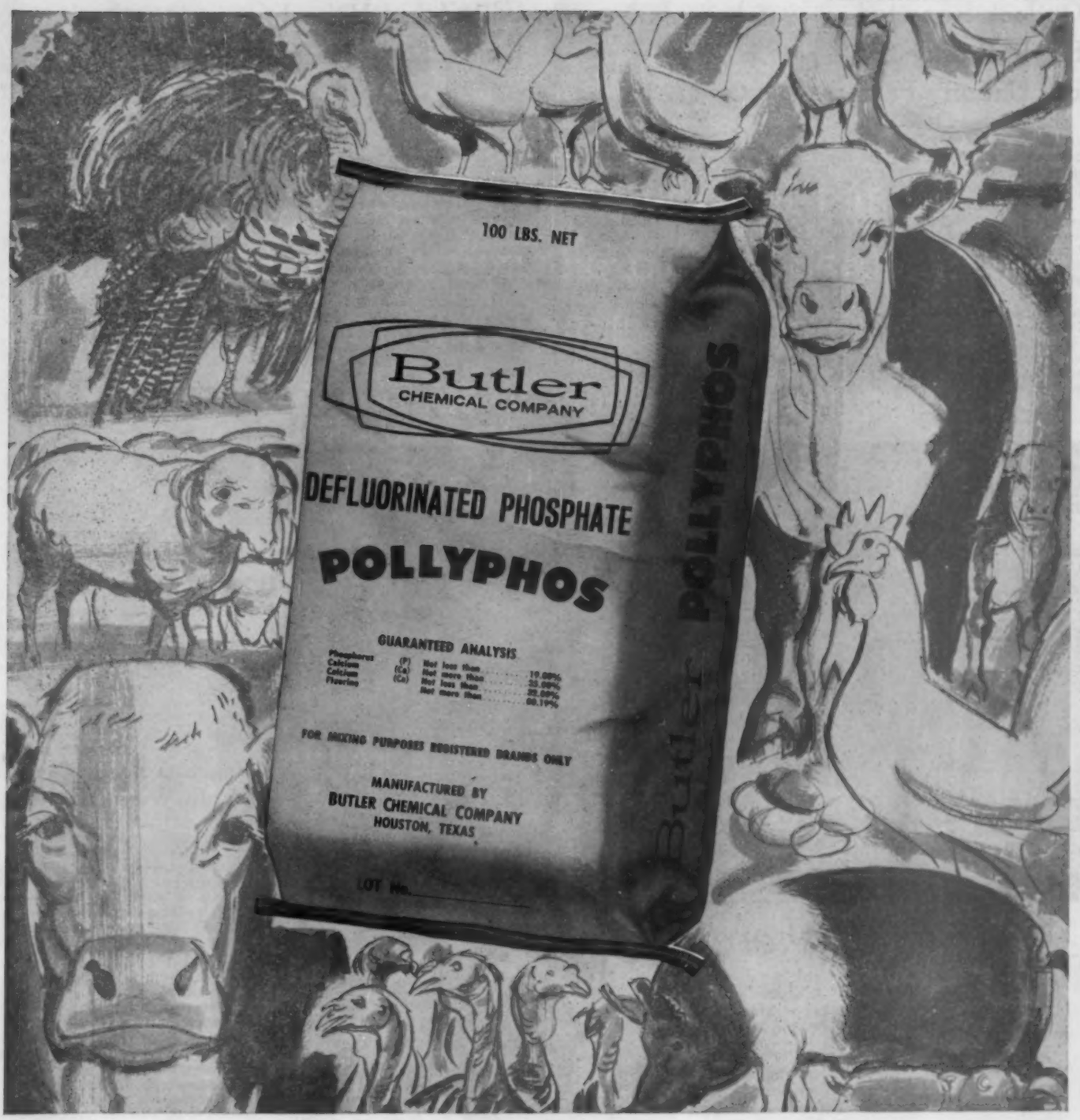

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Producers of the highest grade livestock and poultry — the country over — are fully aware that in order for them to retain their enviable position . . . they must continue to use formula feeds which include the best ingredients produced.

The defluorinated phosphate produced by Butler Chemical Company . . . POLLYPHOS . . . is your source of PHOSPHORUS which meets these rigid requirements in every respect.

BUTLER POLLYPHOS has an all time high phosphorus content of 19% with a minimum 32% — maximum 35% calcium and no more than 0.19% fluorine.

BUTLER POLLYPHOS can be delivered to you in 100 lb. multiwall bags, in bulk, or in truck or carload lots.

Phone, wire or write us or your nearest Butler Sales Agent for low delivered prices of BUTLER POLLYPHOS to your plant.

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Outlook Reported Bright During 1960 For Nation's Farms

PHILADELPHIA, PA. — There's a general feeling of optimism about the 1960 income outlook among the nation's farmers, according to a report from Farm Journal's editors.

The outlook among livestock farmers is especially bright. Hog prices now are at profitable levels. Dairy farmers in most areas look for another good year, as do beef cattle raisers and feeders.

The over-all hog outlook is much better than last year. Economists at Iowa State University say the hog-corn ratio will continue favorable for the next 12 months. Prices are expected to reach a peak of $19 to $21 in July and August, and hold at from $17 to $18 from October through December.

A banker in Illinois said, "I believe the agriculture picture is more favorable in 1960. In our bank, we are primarily interested in total cash earnings—not just the net income of farmers. The small farmers, who have a high cost per unit of production, are in the most difficulty because of rising production costs."

Poultry prices in the Northeast are reported to be on the way back up now. And dairy farmers are looking forward to some good profits in 1960.

The coming of warm weather has also brought some optimism to farm equipment dealers. A Washington state dealer reported recently he had already sold six balers this year. This compares with "nothing but inquiries" at the same period last year.

Moisture conditions in the Southeast are excellent, and fertilizer, seed and feed sales should be at record levels, according to the report.

USDA Asks Additional Residue Study Funds

WASHINGTON—A request for an additional $1,502,800 to make its own studies of the problem of chemical residues on food commodities has been made to Congress by the U.S. Department of Agriculture.

The request was made by Ervin L. Peterson, assistant secretary, in an appearance before the Senate Agricultural Appropriations Subcommittee, when he described this as "probably the most important research item in the entire agriculture department budget." He said the department wants some $6,500,000 for food-chemical research during the year beginning July 1. This would be about $1,500,000 more than was made available for the current fiscal year. He added that USDA "considers that the safety of the nation's food is its first responsibility."

Dr. Byron T. Shaw, chief of the Agricultural Research Service, told the subcommittee the additional funds would be used: (1) to develop safer chemicals for use in producing and processing food commodities and improve methods for using them and (2) to develop new methods of insect control, especially biological controls which do not involve use of chemicals.

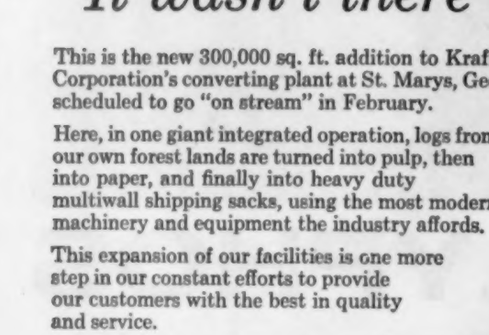
"It wasn't there last year!"

This is the new 300,000 sq. ft. addition to Kraft Bag Corporation's converting plant at St. Marys, Georgia, scheduled to go "on stream" in February.

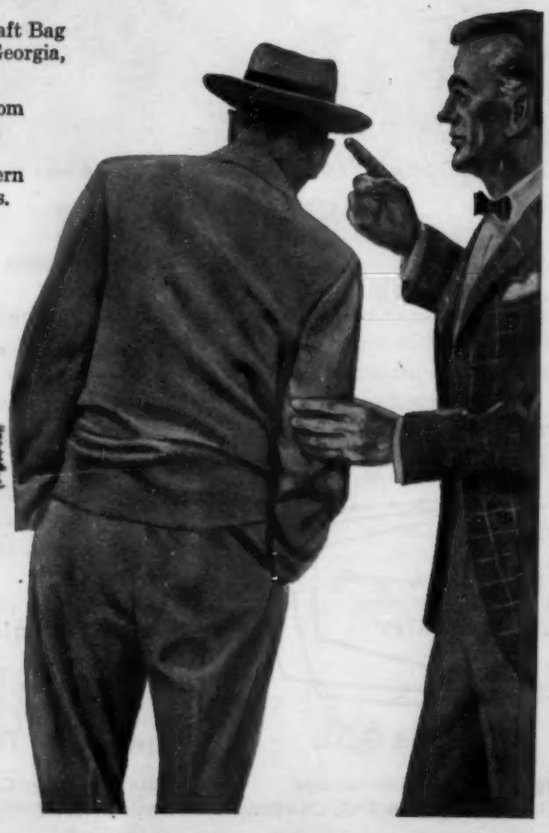
Here, in one giant integrated operation, logs from our own forest lands are turned into pulp, then into paper, and finally into heavy duty multiwall shipping sacks, using the most modern machinery and equipment the industry affords.

This expansion of our facilities is one more step in our constant efforts to provide our customers with the best in quality and service.

We invite your inquiries.



Paper Mill at St. Marys, Ga.



KRAFT BAG CORPORATION
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Daily News Building, Chicago 6, Ill.

Essco Supply Named Buckeye Distributor

SPRINGFIELD, OHIO — Essco Supply Co., Salisbury, Md., largest distributor of poultry supplies on the Delmarva Peninsula, has been appointed distributor for its area by Buckeye Incubator Co., Springfield.

R. E. Murphy

In the joint announcement by Jack Hill, vice president of Buckeye and Ray E. Murphy, president of Essco, it was revealed that Essco Supply Co. will handle Buckeye E-Z feeders, repair parts and service, incubator repair parts and be responsible for incubator service in the area.

The announcement continued that Essco Supply Co. salesmen make direct contact with feed dealers and buyers. In addition, a sales office and several sales personnel are maintained in their Salisbury warehouse where a large supply of Buckeye equipment and parts are stocked. Two service men and a number of trucks are on hand to provide service.

Suggests Feed Men, Banks Work Together

BURLINGTON, VT.—A feed manufacturers' representative told the final session of the 15th annual Farm Credit Conference at the University of Vermont here that there are good sources of credit, but not enough banks to do business with farmers, with the result that the feed business often has to take up the slack period.

The speaker, H. R. Teachout, is associated with E. W. Bailey & Co., Inc., which manufactures mixed feeds for livestcok and poultry in Montpelier and Swanton.

"Stingy credit practices or cash on the barrel head attitudes are as bad as inadequate stocks or poor merchandising," Mr. Teachout declared, "but there is a place where credit ceases to be a service and becomes a contingent liability to the farmers."

He suggested close teamwork between banks and feed dealers in credit activities.

The conference was sponsored by the Vermont Bankers' Assn. and Cooperative Farm Credit in cooperation with the University of Vermont Department of Agriculture.

Hatchery Expansion

LAUREL, MISS. — Sanderson Brothers Hatchery, Inc., has announced a $150,000 expansion program for their Laurel facility. D. R. Sanderson, president, said the program would enlarge the plant to 7,758 sq. ft. The present floor space is 3,852 sq. ft. When completed the new plant will require an additional 10 men—five broiler floor operators and five hatchery and grower operators—bringing the staff up to 170 employees.

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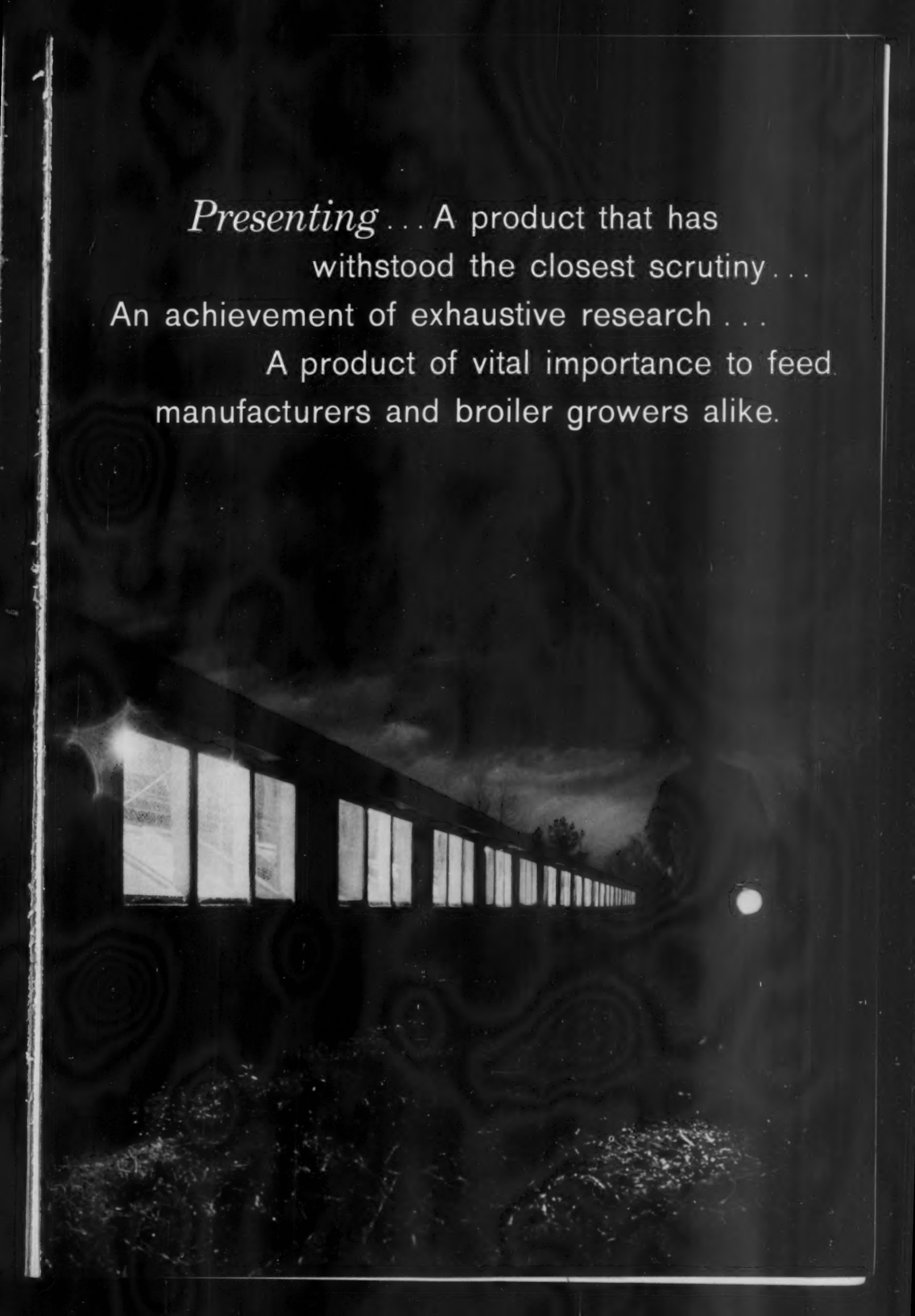
Presenting . . . A product that has
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An achievement of exhaustive research . . .
A product of vital importance to feed
manufacturers and broiler growers alike.

Announcing

ZOA

thoroughly tested coccidiostat

Zoamix is the result of one of the most complete researching jobs ever conducted in the poultry industry! Fourteen years, and 150,000 man-hours ago, Dow researchers began their search for a coccidiostat that offered the best possible protection . . . the utmost safety to animals and humans . . . the least interference with the nutritive requirements of the bird. They investigated and discarded some 13,000 compounds until they discovered 3, 5-dinitro-o-toluamide . . . the name for the chemical in Zoamix. Since then they have discarded another 10,000 compounds as inactive or inferior. Then, before it was marketed in the U. S., Zoamix was tested on 70-million birds under every possible growing condition . . . field-tested by many major feed manufacturers and colleges . . . and used internationally for over a year and a half—making it one of the most widely sampled and examined products of its kind. The results of these tests were amazing!

In Canada, for example, Zoamix has become so popular and successful that *four out of every five commercially grown birds on a coccidiostat are fed Zoamix!* In this country, the announcement of Zoamix comes at a time when agricultural chemicals as a whole are being closely examined for any possible hazard to consumers. It is approved for feeding young chickens right up to market time!

best possible protection . . . greater feed efficiency . . . greater weight gains

Tests comparing coccidiosis control with nine other coccidiostats show Zoamix (containing Zoalene) more effective than eight, equally effective as the other, but superior to all in combining protection, feed conversion, weight gains and certain safety benefits.

Comparative tests (shown at right) with other coccidiostats illustrate the Zoamix superiority in producing better gain and feed conversion. On 10,000-bird flocks the extra profit can amount to $250.00 —often much more.

RATE OF GAIN AND FEED CONVERSION COMPARISONS

Zoalene Compared with Following Coccidiostats		A	B	C	D	E	F	Totals
Number of Comparative Tests		29	15	16	23	5	6	94
NUMBER OF TESTS IN WHICH:	Zoalene Superior for Weight Gains	28	14	16	14	5	6	83
	Other Coccidiostat Superior for Weight Gains	1	1	0	8	0	0	10
	No Difference in Weight Gains	0	0	0	1	0	0	1
	Zoalene Superior for Feed Conversion	26	10	14	15	2	6	73
	Other Coccidiostat Superior for Feed Conversion	1	2	2	7	2	0	14
	No Difference in Feed Conversion	2	3	0	1	1	0	7

safer to use

The safety benefits of Zoamix make it the most reliable coccidiostat on the market today!

1. **It's safe** to switch from another coccidiostat to Zoamix—without a setback in the bird's growth!

2. **It's safe**—feeds won't cause physical injury if mistakenly fed to other farm animals—ducks turkeys, geese, hogs, sheep, cattle, dogs! (But remember, Zoamix is recommended only for growing chickens.)

3. **It's safe** when mixed with all other commonly used feed ingredients and additives in your chicken feed formula. Zoamix is completely compatible and doesn't alter feed nutritive requirements!

4. **It's safe** to handle! No danger to mill workers or consumers of Zoamix fed birds.

5. **It's safe** to feed to broilers right up to market time. Grower can raise birds on one feed formula and market them at the best time—without withdrawing coccidiostat prior to delivery!

6. **It's safe** for broilers. Zoamix results in no change in hematology, organ weights or histology; and it will not impart an "off" flavor to the meat!

easier to handle and assay!

Assaying for Zoamix is simple, speedy and accurate with spectrophotometric method—far faster than tests required for other coccidiostats.

Handling. Zoamix is designed for ease of handling in the feed mill—free from dust and free flowing. Under storage it will not cake. Stored at room temperature for fourteen months, and subjected to violent and sudden temperature differences, feed containing Zoamix remained as potent as when freshly mixed. In addition, Zoamix can be pelleted and re-pelleted without loss of potency.

DOW®

ZOAMIX®

the new standard of efficiency in coccidiosis control with definite safety benefits!

See for yourself! Compare Zoamix point for point with any other coccidiostat. You'll find none can match this combination of benefits: (1) The best possible protection... (2) Allows maximum feed efficiency and (3) maximum weight gains... (4) Safety... (5) Ease of handling and assaying.

ZOAMIX IS AVAILABLE NOW

—warehoused in several centrally located cities. For assistance in registering your formula, or additional help and technical service, write:

THE DOW CHEMICAL COMPANY
Agricultural Chemicals Sales Department, Midland, Michigan

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Adding to its reputation as a major manufacturer of agricultural chemicals, The Dow Chemical Company is devoting a continuous research and development program to help growers and ranchers raise more productive . . . more profitable livestock.

Dow, with its large research and development staff, nation-wide facilities, and extensive resources devoted to the agricultural field, continues to probe deeply and thoroughly into the modern chemical approach to animal health.

As evidenced by the several million dollars and many years' study of coccidiosis and chemicals that produced Zoamix, Dow's future role in animal health products will be an important one. As for past accomplishments, these Dow products have shown a new way to healthier, more profitable poultry and livestock:

DOWZENE® DHC
Dow piperazine dihydrochloride for effective, safe, one-day worming of dogs, swine and poultry.

DL-METHIONINE
One of the most effective amino acids for the efficient production of healthy, fast-feathering birds.

TROLENE®
The first systemic insecticide ever developed for preventing grub damage and market dockage in cattle.

KORLAN®
Insecticides for controlling livestock pests. For direct or residual spraying, or as a smear or dip to control a variety of external insects.

THE DOW CHEMICAL COMPANY • Midland, Michigan

AMBURGO SALES MEETING—Listening to Dr. Milton Scott, Cornell University, at the annual Amburgo sales meeting held recently in New York are (left to right): first row, Morton Koshland, Harold Metzner, Walter Schuck, L. Paul Brubaker and Samuel M. Golden; second row, J. Louis Golden, Allan Kallish, James Colten, Bernard Zaigler and Francis D. Varga.

Dr. Milton Scott Talks At Amburgo Meeting

NEW YORK — Dr. Milton Scott, professor of animal nutrition and poultry husbandry, Cornell University, was the honored guest and principal speaker at the Amburgo annual sales meeting held recently at the Commodore Hotel.

Amburgo, manufacturer of vitamin and fish soluble concentrates and manufacturers' distributor of vitamin concentrates and feed additives, called in its representatives from all over the U.S. to discuss recent breakthroughs in the nutrition field.

Dr. Scott disclosed the result of recent experimentation in poultry nutrition and provided up-to-date information on unidentified growth factors and their relationship to poultry and turkey nutrition.

Each of the Amburgo men presented details of feed conditions native to his area. The results of new feed formulations developed at the Amburgo experimental farm in Doylestown, Pa., were discussed and plans were made to introduce them to feed merchants.

Briefing sessions were held by sales executives of companies whose products are distributed by Amburgo. Stabilized Vitamins, Inc., Distillation Products Industries, and Grace Chemical Co. all made presentations. An entire day was spent at Commercial Solvents Corp., discussing Baciferm (zinc bacitracin antibiotic) and its new product, Silotracin (zinc bacitracin antibiotic silage preservative). Amburgo personnel also met with officials of Standard Brands, Inc., whom they have represented for over 20 years as distributors of FIDY.

Samuel Golden, president of Amburgo, announced that the company has increased its budget for research at the experimental farm and improved production facilities at Amburgo Mfg. Co., Inc., factory, which manufactures Amburgo Supertrate and Amburgo Sard-X. He stated that "indications point to a 25% sales increase this year."

Accountant Promoted

FORT WAYNE, IND.—The promotion of James E. Tellman to the new position of salary and wage administrator for the Central Soya Co., Inc., has been announced by Harold W. McMillen, Central Soya board chairman.

Mr. Tellman will report directly to Paul E. Hensel, vice president-personnel. Mr. Tellman joined the company in 1949 as an accountant in its Fort Wayne office, following graduation from Indiana University where he majored in business administration.

CHAIRMAN NAMED

MEMPHIS, TENN. — Ed Jappe, Marianna Sales Co., and dealer in cottonseed and soybean products, has been appointed chairman of the 44-man finance committee of the Citizens Assn. of Memphis and Shelby County, it was announced by Dr. Stanley J. Buckman, president.

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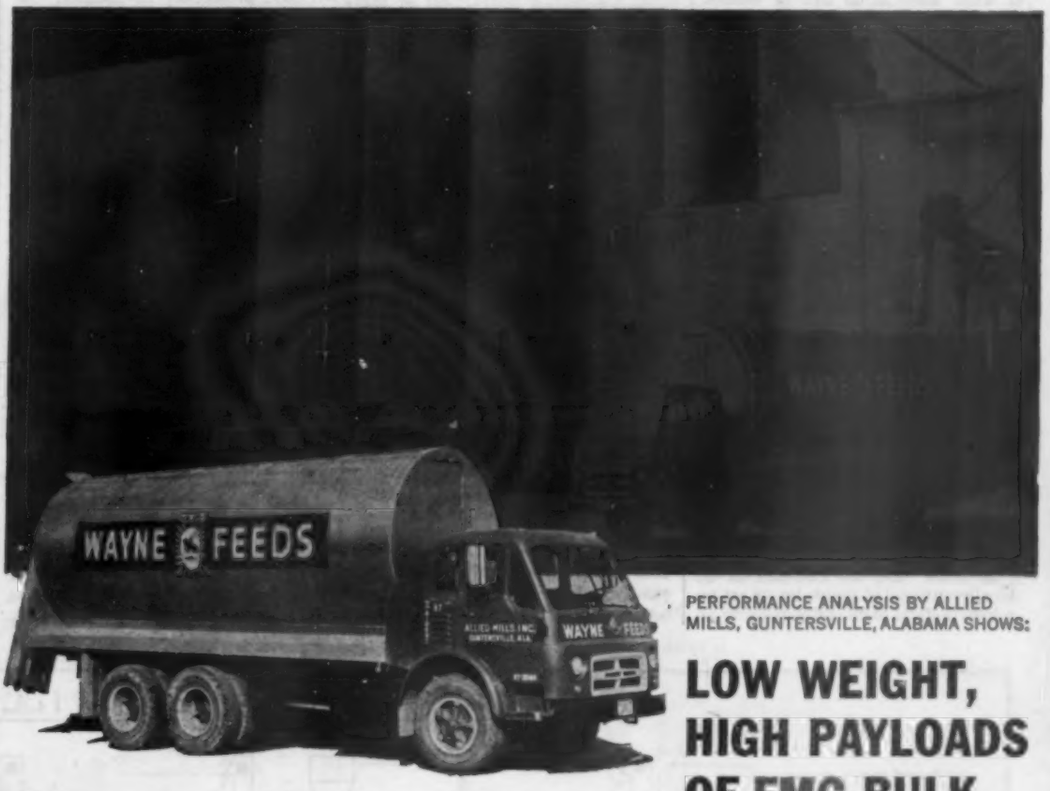

PERFORMANCE ANALYSIS BY ALLIED MILLS, GUNTERSVILLE, ALABAMA SHOWS:

LOW WEIGHT, HIGH PAYLOADS OF FMC BULK UNITS PAY OFF!

Long capital life, fast unload speed, and all-around mechanical dependability also influential in Guntersville's purchase of eight FMC Bulk Units

"FMC bulk transport units help reduce our costs, because they transport top payloads and give efficient, dependable service," says Mr. Ed Buchanan, Manager, Allied Mills, Guntersville, Ala.

"We bought the largest truck body FMC has available—20 feet long—and on each trip we can haul at least 15 tons of bulk and some bagged feed," Mr. Buchanan continues. "And based on others' experience, we expect at least 8 to 10 years of life from our FMC units."

Mr. Buchanan is one more FMC user who takes these exclusive FMC benefits for granted: High payloads, low weight * Long equipment life * Fast unloading * Trouble-free, all-mechanical operation * Minimum maintenance costs * Least pellet fines.

Join the rapidly growing group of informed feed men who have learned from experience that:

FMC BULK SYSTEMS COST LESS—BECAUSE THEY DO MORE, LAST LONGER!

LOCAL DELIVERY NOW AVAILABLE

Now you can take "freight allowed" delivery of your FMC Bulk Units from the following convenient points (Service and mounting facilities also available at these points) Jacksonville, Texas; Albertville, Alabama; Clarksville, Georgia; Charlotte, North Carolina; and Tampa, Florida.

Watch for announcement of additional delivery points now being established.

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Automation in the Feed Industry

"It may be timely for us to take stock of what automation can or cannot accomplish."

By Paul O. Berg
Professional Engineer

Copyright 1960 Paul Berg

Paul O. Berg

AUTHOR—Paul Berg, Fort Wayne, Ind., is a professional engineer who specializes in feed mill and grain storage design. Mr. Berg was responsible for the engineering for the pilot feed mill at Kansas State University and has designed feed and grain projects at many different locations both in the U.S. and in foreign countries. This article was adapted by the author from a talk given at a district Association of Operative Millers meeting in Denver.

To the feed miller "automation" has presented visions of a new and delightful future for his business. Glowing stories in Reader's Digest style tell that the completely automatic plant is just around the corner —that it will answer the labor problem—that quality will be assured—that breakdowns will be eliminated, all from the mere turning of dials or pushing of buttons.

Before we succumb entirely to these prognosticators of good tidings, it may be timely for us to take stock of what automation can or cannot accomplish.

What are some of the things that can be accomplished by automation?

(1) Accuracy of formulation and mixing can be improved.

(2) Production can be increased with the same amount of labor.

(3) Labor can be used more effectively.

(4) Product spoilage can be decreased.

(5) Equipment failure and damage can be reduced.

(6) Working conditions can be improved.

(7) Production records can be improved.

(8) Power, steam and other services can be reduced.

When the feed industry started converting from a sack operation to one in bulk, a long step was made towards efficiency. With bulk handling and storage, the stage was set for the entry of many types of automation devices. It is interesting to note that the flour industry preceded the feed industry in this acceptance of bulk by 30-40 years.

In order that we can aim at an ideally automated plant, let us set up a hypothetical plant, fully utilizing all the automation devices available today (see Figures I and II). The discussion of this plant will follow a logical flow pattern from receiving to shipping.

RECEIVING—Unfortunately, from an automation standpoint, the unloading of ingredients does not lend itself to the application of automatic equipment. Such things as the variation in size and type of shipping vehicles, the spasmodic arrival of shipments and the requirement for sampling and testing, all combine to make automation impractical at the present time. The increased use of the hopper-bottom railroad car and the platform-type truck lift has made possible rapid unloading rates. One of the better solutions to the box car unloading problem has been the use of the scoop truck. Probably the greatest lack in this area is the failure to make use of high capacity material handling equipment to achieve the optimum tons to man-hour ratio. True automation in this area will remain impractical for some time.

After the shipping vehicle has been unloaded, the material moves by mechanical handling equipment to the bin. The receiving hopper would be equipped with level indicating devices to tell the operator when the hopper has cleared. The discharge gate on the hopper would be remotely controlled. The conveyor from the hopper to the elevating equipment could be of a number of different types, but the belt conveyor would be selected because it is self-cleaning and because magnetic protection can be incorporated conveniently. Magnetic protection is important in automation because it is a protective device. The conveyor drive would include a load sensing device to shut off the equipment if a jammed condition developed.

The material is elevated by a bucket elevator which is electrically interlocked (see Figure III) to the receiving belt conveyor so that electrical failure in the bucket elevator will automatically stop the belt conveyor. The bucket elevator would be equipped with back-stop and a torque converter to provide the start-up power necessary if the equipment stopped under full load. This torque converter would be equipped with overload protection. In addition, the bucket elevator would have a device on the boot pulley to detect belt slippage. Should the bucket elevator become overloaded, it is possible for belt slippage to occur on the head pulley resulting in boot pulley speed reduction which can be detected by a centrifugally operated switch. The bucket elevator would be equipped with a self-cleaning type boot to eliminate contamination and the attendant cleanout task.

Many of the protective devices that have just been discussed will recur in the flow through the mill but will not be mentioned again in this discussion.

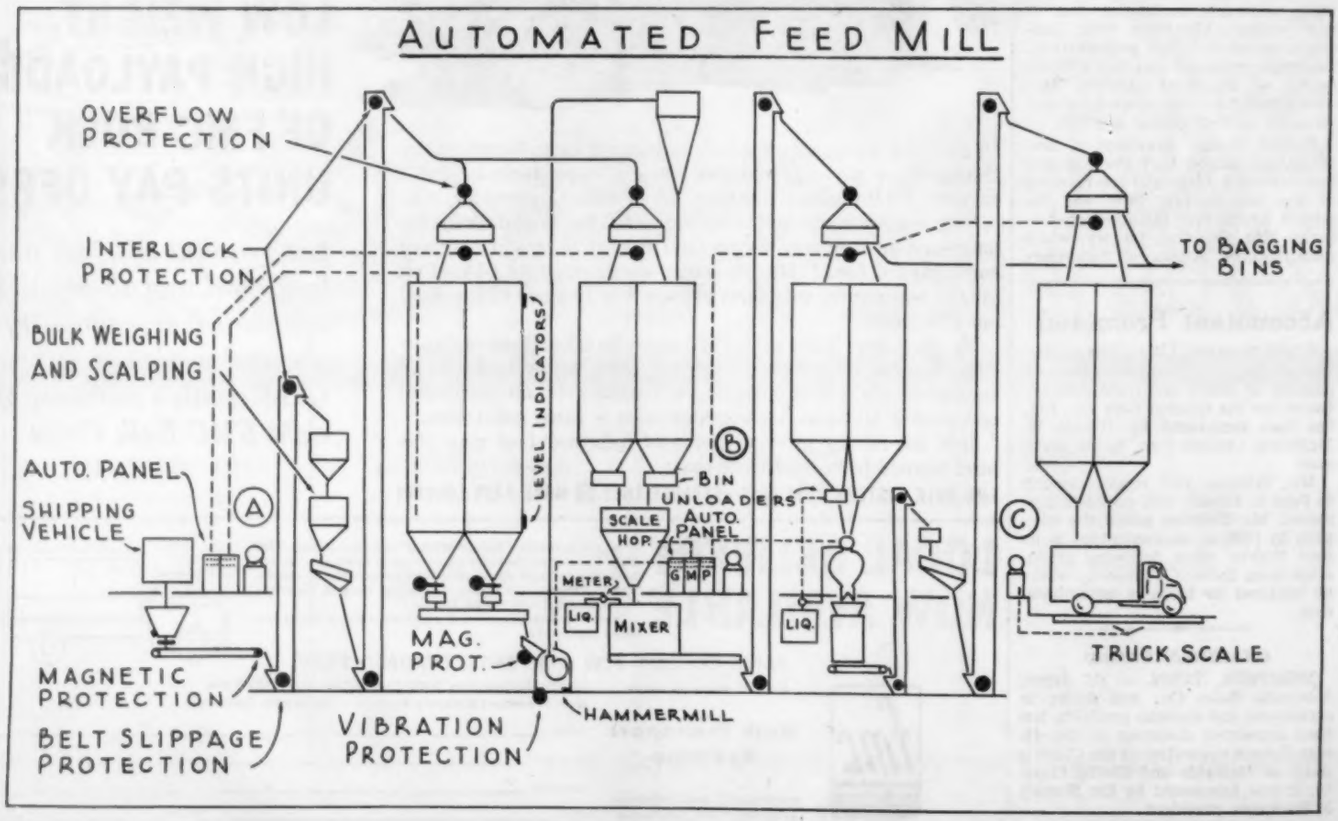
A pneumatic system, of course, will solve some of the interlocking and contamination problems. Pneumatic conveying also possesses certain disadvantages, but a complete analysis of this type conveying is beyond the scope of this discussion.

After elevation, the material passes through a bulk weighing scale, an operation which is desirable for shortage claims and inventory control. This bulk weighing scale can be obtained with a number of features. These include, for example, totalizing of the amount received, date-printing, identification of the ingredient and full inventory record. This information can all be available at the receiving depot, and the information can be transmitted to the office.

The feed is scalped to remove objectionable foreign material and then passes through some form of distribution device, such as a turnhead, which selects the bin through a remote control. It is desirable to protect the system from bin overflow by putting a level indicating device at the entrance of the turnhead (see Figure IV). This would shut off the bucket elevator and warn the receiving operator that trouble has occurred.

In some cases, level indicators are useful within the bin itself to indi-

FIGURE I



cate near-empty and near-overflow conditions (see Figure V).

If the material is grain and is to be stored for any length of time, a temperature recording device is desirable to spot a hot condition of the grain and warn the operator of this condition.

Therefore, in the entire receiving system, once the material has been removed from the shipping vehicle, it is merely a matter of directing the flow to the proper bin. The flow through the material handling, weighing and cleaning equipment is very automatic.

Receiving of liquids would be accomplished by a gravity-type flow from either a tank truck or tank car. The tank truck would be weighed-in over a truck scale. The material in the tank car would be checked by volumetric measurement in the storage tank. Liquids would be passed through a strainer to remove foreign particles. The entire system of receiving would be fully automatic and require only the operations concerned with the attachment to the vehicle.

Once into the storage tank, the liquids would be under temperature control for maintaining a preselected storage temperature.

PROCESSING—A number of processing devices are in use in the feed mill, such as the hammermill, the roller mill, the cracking roll, the crimping roll and the flaking roll, all converting grains by size reduction. All these devices require feeding equipment and some means of conveying the processed material to a bin.

For selection of the bin, the panel board with remote selection devices is necessary. This panel board would also include a controlling means whereby amperes from the driving mechanism on the processing equipment would be used to control the feeding mechanism. In this way, the processing equipment would be kept at full load conditions at all times, dangerous overload conditions would be detected instantly, and the feed would be shut off promptly (see Figure VI).

The equipment would be protected by a magnetic separator. A vibration detection device would be provided to detect any unusual out-of-balance condition that would require shutdown to protect the equipment (see Figure VI).

In this feeding system, a continuous-weigh gravimetric-type feeder would be necessary for inventory control purposes. The gravimetric feeder can be fitted with recording equipment so that the material being processed, the date and the amount weighed out would be on record.

The control panel would be made a part of the mixing operator's responsibility and the panel board will operate in conjunction with the mixing panel.

MIXING—In order that automation in the mixihg process be complete, it is necessary that dependable flow exists. This means that ingredients must be secured according to specifications, giving some assurance that the material will flow out of the bin. The bins must be provided with equipment that will draw the material out uniformly and representatively.

In the batch mixing method, conveyors to the batching hopper would be provided to give regulated flow. They would be controlled automatically from the control panel (see Figure VII).

The conversion of weight to a measurable force usable by a control system is a manufacturer's problem. Several methods are available. These include levers, the Baldwin load cell or the Emery hydraulic cell. The selection of desired material quantities would be accomplished by adjusting and balancing a potentiometer or a differential transformer.

There are a number of ways to preselect the weight. The most familiar method is by dial. The punch card system, an early method that is still being offered, has the greatest "things-to-do" memory. The peg board meets the objection of the punch card being fragile, but it does have some capacity limitation. The capsule is somewhat similar to the

FIGURE II

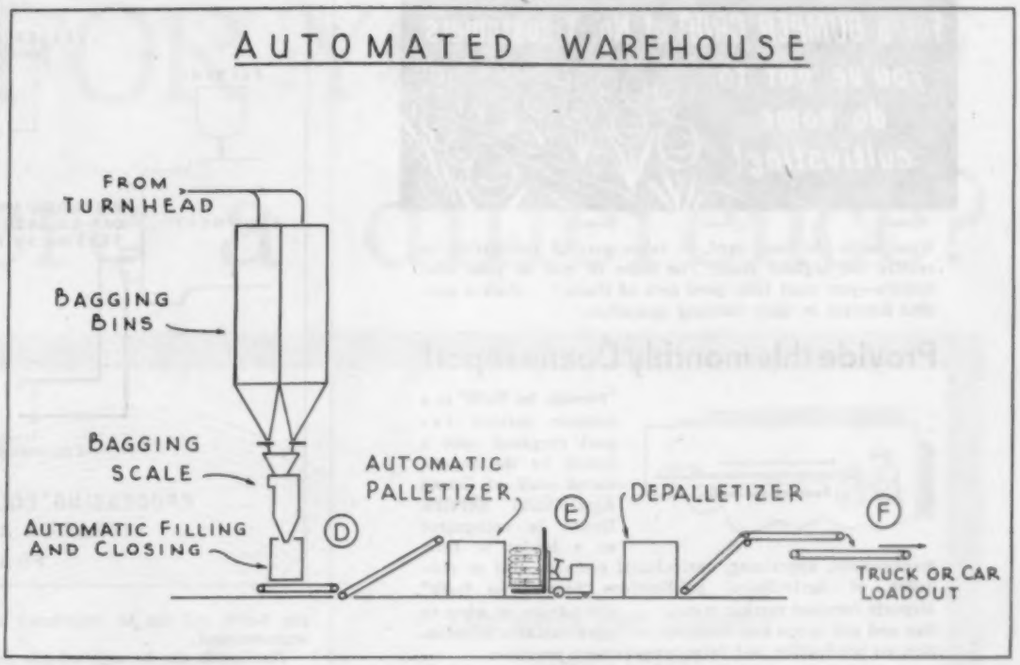
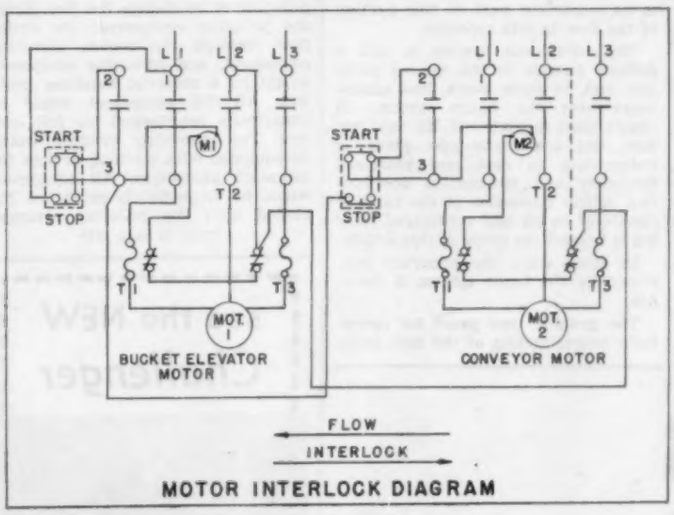
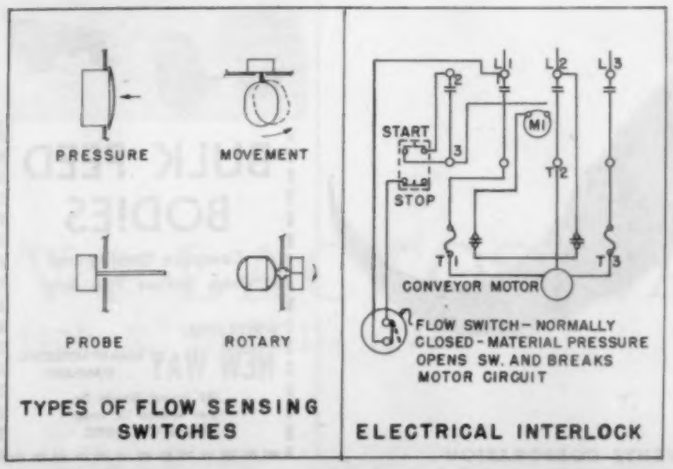


FIGURE III



MOTOR INTERLOCK DIAGRAM

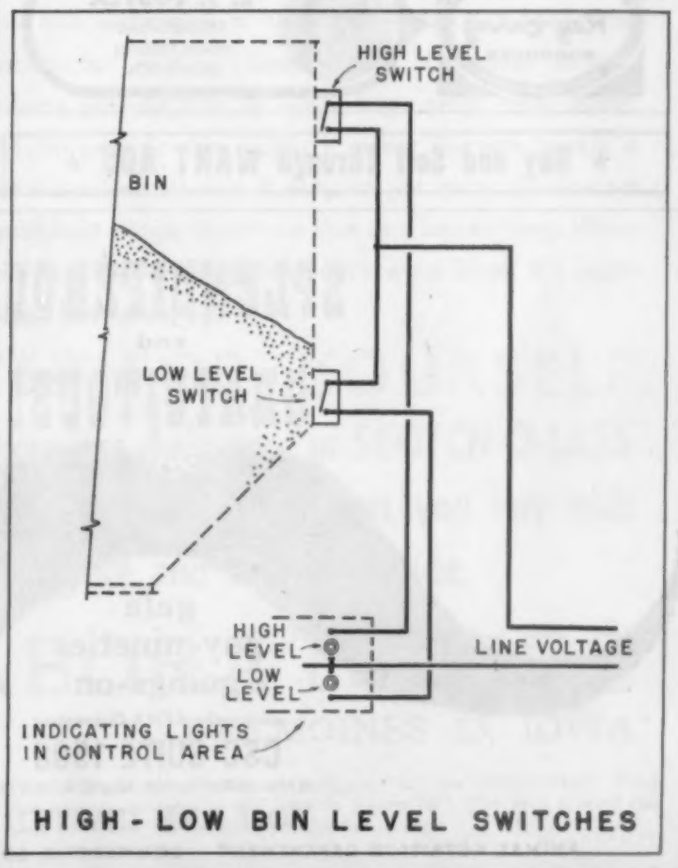
FIGURE IV



TYPES OF FLOW SENSING SWITCHES

ELECTRICAL INTERLOCK

FIGURE V



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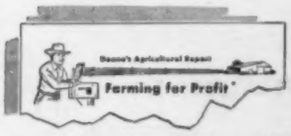

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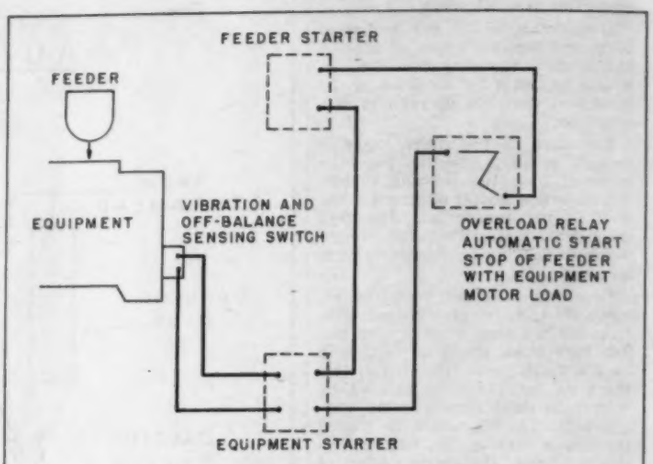
FIGURE VI



PROCESSING EQUIPMENT OVERLOAD VIBRATION AND OFF-BALANCE PROTECTION

peg board and can be considered an improvement.

The liquids can be weighed into the mixer, but weighing is not necessary because of the uniformity of specific gravity. Therefore, the meter with counter control has been found very acceptable.

The handling of microingredients is an increasing problem because of the growing variety of this portion of the feed. Keeping premixes in bins fits into the automation scheme, but it is not always economically feasible because of the wide variety and small quantities of premixes used. Another solution is to mix directly from the microingredient sacks and drums.

The batch mixer would be equipped with air-cylinder operated gates. The gates would be contour shaped to reduce contamination. The surge bin is an important part of this portion of the flow to give capacity.

The continuous system is still a definite answer to the mixing problem and, in some ways, has advantages over the batch system. In plants sized in excess of 150 tons per day, the continuous-type plant is competitive in cost and possesses flexibility and automation possibilities. A full discussion of the relative merits of batch and continuous mixing is beyond the scope of this article.

In some ways the accuracy possessed by the batch system is desirable.

The graphic type panel for operator's understanding of the flow progress is desirable in any automation operation.

With either the batch or continuous mixing process, the use of inventory control features is of great value to the over-all operation and can be done by counters or by readout equipment.

Moisture control equipment is still in the development state, but the rapid growth of pelleting has reduced the interest in this type equipment.

PELLETING—The pellet mill operator would select the bin and place the entire operation on automatic control. Steam and power would be regulated so that the mill would function practically automatically (see Figure VIII). The operator would be required only to make the preadjustments for the type feed that he is pelleting or to change the dies. From the pelleting equipment, the entire flow through the cooler, elevating equipment, and screening equipment would be a material handling problem. All this equipment would be electrically interlocked for full control. The crumbling machine would be equipped with warning devices for vibration protection. All equipment would be magnetically protected. Included with the pelleting arrange-

(Turn to page 102)

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and
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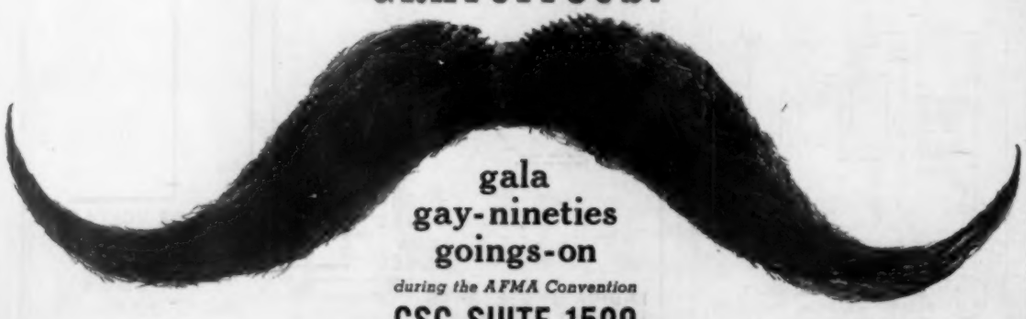

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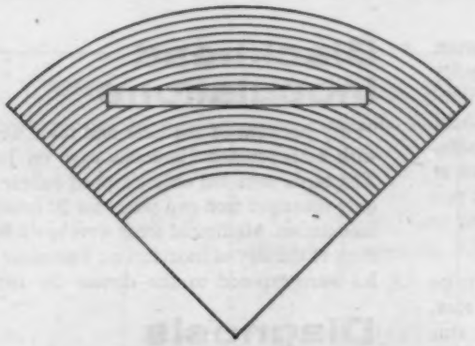

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*The difference is: The lines in figure "A" are STRAIGHT. They just appear bowed like the lines in figure "B". The arcs around the lines in figure "A" make them appear to dip.

Histostat®-50 scores highest

• WEIGHT GAIN • FEED EFFICIENCY •

Once again Dr. Salsbury's Histostat-50 has been proven to prevent blackhead best and to provide other benefits needed by turkeys for fast, profitable gains. The following is taken from the "1959 TURKEY DISEASE CONTROL REPORT," University of Minnesota, Northwest School and Experiment Station, located at Crookston, Minnesota. It is reprinted here to give you factual data on a series of tests that are important to every feed man.

"Infectious Enterohepatitis (Blackhead) continues to be one of the more important turkey diseases in this area. According to USDA reports, death losses from this disease amount to over $3,750,000 annually, and there is an additional financial loss because other birds in the flock become infected but survive and show a loss of weight and market condition. Additional birds may be condemned at the time of inspection because of healed cecal or liver lesions.

"In the past ten years, progress has been made in the development of effective drugs, but the complete prevention and control of blackhead has not been achieved. Because there is little or no immunity to the disease, the preventive program has to be used on a continuous basis.

"The objectives of this year's projects were:

1. To compare the efficacy of .025 per cent 4-nitrophenylarsonic acid (Histostat-50), .025 and .035 per cent Nithiazide (Hepzide), .011 and .0166 per cent NF-64, .0166 per cent NF-179 and .011 per cent of furazolidone (NF-180) when used on a continuous basis to prevent blackhead.
2. To determine the effect of these drugs when used continuously from 4 to 24 weeks on the growth rate and finish of the turkeys.

"Four hundred turkeys were divided into eight flocks of 50 birds each (25 hens and 25 toms) and rotated clockwise at weekly intervals in the pens to insure equal exposure of all birds to the contaminated yard.

"The treatments employed from 4 to 24 weeks were as follows:

Lot 1B—Basal ration Minnesota Standard 25% protein.
Lot 2B—Basal+1 lb. Histostat-50 per ton.
Lot 3B—Basal+1 lb. 11 ounces Hepzide 30 mix per ton.
Lot 4B—Basal+2 lbs. 5 ounces Hepzide 30 mix per ton.
Lot 5B—Basal+2 lbs. NF-64 mix (100 gms. pure NF-64) per ton.
Lot 6B—Basal+3 lbs. NF-64 mix (150 gms. pure NF-64) per ton.
Lot 7B—Basal+3 lbs. NF-179 (150 gms. pure NF-179) per ton.
Lot 8B—Basal+2 lbs. NF-180 (100 gms. pure NF-180) per ton.

Blackhead Inoculations

"Fifty per cent of the hens and toms were inoculated with embryonated Heterakis eggs on July 24, 1959. The birds were fed only chopped yellow corn as their only source of feed and water for 20 hours prior to the inoculation. Medicated feeds were again fed on the evening of the day of inoculation. The other birds in each lot were exposed to the disease by natural contact.

Diagnosis

"All birds that died were autopsied and cause of death determined. The heart, liver, spleen and intestinal tract were fixed in formalin solution and sent to the Veterinary Laboratory for further study. This was to determine if any other diseases were complicating the blackhead losses.

Drug Analysis

"Representative samples of each feed at each mixing time were sent to the laboratory of the respective manufacturers for drug analysis. The drugs were prepared in a suitable carrier pre-mix, then added to a soybean meal base before being added to 1,000-pound mix of the Minnesota Standard Turkey ration.

"The analysis of the drug levels of the forty-eight mixings of the various rations showed good agreement between the theoretical and the actual amounts of the many different levels of drugs used in the experiments. The assays showed the percentage of drugs in all rations to be well within the limits of error of the analysis.

Conclusions

"From 10 to 14 days after the exposure the birds showed the effects of the disease particularly in the control pen. Losses occurred starting about 14 days after exposure. During the experiment, a few birds died from non-specific causes. There was no other disease apparent in the flock.

(Comparative data are given in table on next page.)

"Although the range has been used for these blackhead studies since 1951 and in earlier experiments heavy mortality was encountered from natural exposure, in recent years very little exposure has been obtained

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FLESHING • BLACKHEAD PREVENTION

Weight, Feed Efficiency, Finish, and Mortality Data

Lot Number	1B	2B	3B	4B	5B	6B	7B	8B
Drug Treatment	None	1 lb. Histostat 50	1 lb. 11 oz. Hepzide 30	2 lb. 5 oz. Hepzide 30	2 lb. NF 64	3 lb. NF 64	3 lb. NF 179	2 lb. NF 180
Av. Wt. Toms, Lbs.	21.96	22.94	21.81	21.95	22.47	21.49	23.44	23.05
Av. Wt. Hens, Lbs.	15.13	15.58	14.99	15.01	15.72	15.28	15.54	14.74
Feed Req. Per Lb. Gain	5.08	4.17	4.67	4.32	4.63	3.91	3.98	4.48
Feathering—Toms	93.75	98.75	94.44	100.00	100.00	89.29	98.96	97.50
Hens	100.00	100.00	100.00	100.00	98.75	98.86	100.00	99.00
Fleshing— Toms	84.38	96.25	90.28	84.38	92.30	80.95	92.71	88.75
Hens	100.00	100.00	100.00	100.00	98.75	98.86	100.00	98.00
Mortality Blackhead, %	24%	2%	12%	10%	22%	14%	4%	12%

from the soil. Heterakis ova have been administered for the past few years to supplement the pen exposure but in spite of this exposure there does not seem to be a buildup of the infection in the soil. Whether the constant use of the area with the continuous use of medication has played any value in reducing the amount of blackhead picked up from the pen exposure is open to speculation.

"With the exception of Lot 5B, the mortality was reduced 50 per cent or better. Lots 2B and 7B had the lowest loss from blackhead.

"At the time of evisceration, the organs of all birds were examined for evidence of lesions of Blackhead or any other diseases. A few birds showed healed lesions of blackhead, but had recovered to pass inspection."

What Does This Mean To You?

As a feed manufacturer or dealer, you'll surely want your customers' birds to have all the many benefits provided by Dr. Salsbury's Histostat-50. Also you'll be glad to know that Histostat is an "old drug" that does not require special paper work for FDA clearance. Please phone, write or wire today for a copy of Feed Manufacturer's Guide No. 16. Or, ask for a Dr. Salsbury's technical service adviser to call and personally answer your questions about using Histostat-50 to formulate a superior turkey feed.

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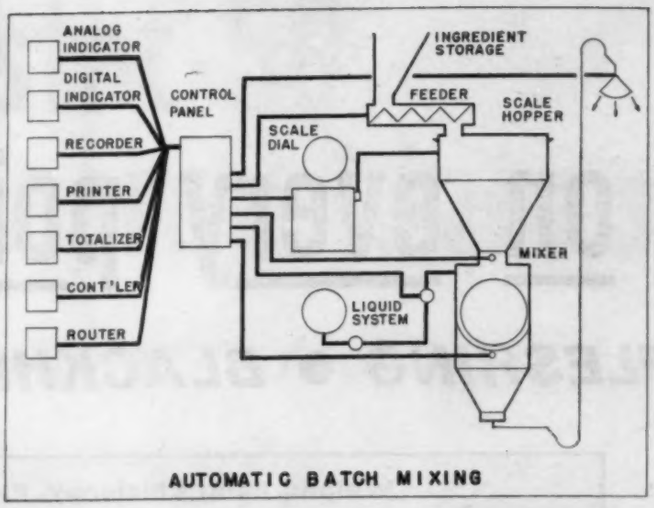
FIGURE VII



AUTOMATIC BATCH MIXING

ment would be liquid addition devices controlled by a weigh feeder. From the pelleting equipment, the feed would go to bins. In the case of molasses mixing, the feed would be processed through a blender where molasses would be added. From there the feed would go either to bagging scales or to bulk bins for loading to bulk trucks.

WAREHOUSING AND BULK LOADING—If the operation is in sacks, the bagging scale would automatically fill the bag, and, after closure, the bag would be taken to a palletizer (see Figure II). The sewing would be automatic to the extent that actuation would be automatic for tag application, and thread and tape sealer would be automatically cut. This entire operation would require the attendance of one man. The bag would be check-weighed for accuracy. The automatic palletizer would require only the lift truck operator, who would take the pallets to the warehouse floor. In reclaiming the bags from the warehouse floor, the pallet would be taken to a depalletizer which automatically would take off the number of bags desired and deposit them onto a telescoping conveyor that reached out into the truck. The bulk truck would be loaded and weighed from bins either through a traveling hopper scale or by a truck scale. This system would be remotely operated from one station.

This covers the main components that can be used in the feed industry. Referring to Figure I and Figure II, the conclusion can be reached that six points of equipment supervision would be required to operate this highly automated arrangement: (A) The receiving, weighing, cleaning and distribution; (B) preparation, proportioning, pelleting, screening and distribution; (C) bulk truck loading; (D) packaging; (E) warehousing, and (F) truck and car loading. Obviously, if sufficient automation is incorporated and the plant is well planned, some of these points may be combined under a single supervision. The limit of automation is a matter of economics as every component, or series of components, must provide sufficient saving of some form to be justified.

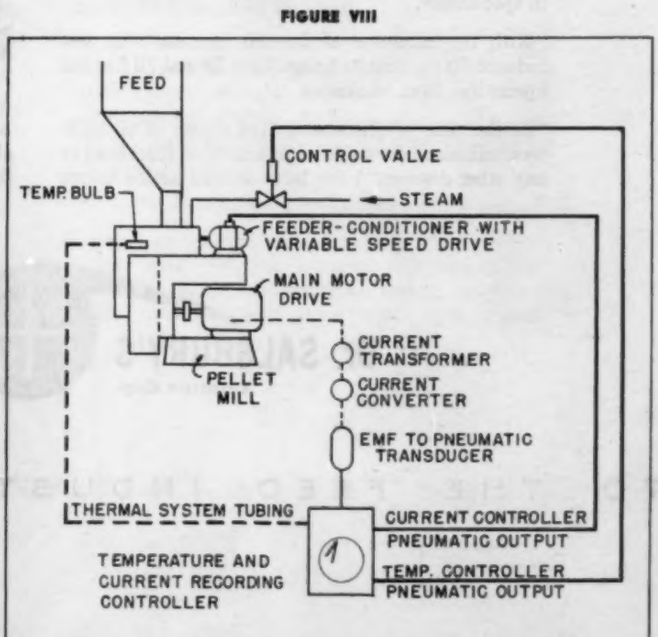
QUESTIONS POSED—Now that we have considered feed milling automation in many of its aspects, I have a few questions to ask the industry:

First—Is the industry ready to modify its methods to make full use of these automation developments? The higher equipment costs make a three-shift operation highly advantageous. Such an operation is preferable to possession of duplicate facilities. Complete conversion to bulk storage and handling would be necessary. The handling of microingredients must be modified to fit into the automation scheme.

Second—Is the industry ready to absorb automation? The industry is

(Turn to page 108)

FIGURE VIII



AUTOMATIC PELLET MILL CONTROL SYSTEM

Soft Phosphate as a Potentiating Agent for Broad-Spectrum Antibiotics

By Dr. Arthur A. Camp

Texas Agricultural Experiment Station

SUMMARY

The results of two floor-pen broiler tests and two battery broiler tests involving approximately 2,700 birds are reported in this paper.

Inorganic phosphorus was fed in all instances at the .6% level.

Calcium was fed at 1.3%, 1%, and .6%. Terephthalic acid was fed at the .4% level.

The basal diets employed contributed approximately .115% inorganic phosphorus to the experimental diets and the remaining .485% phosphorus was supplied by either dicalcium phosphate, soft phosphate or a combination of the two. Soft phosphate was substituted on an equi-phosphorus basis for 0, 25, 50, 66, 75, and 100% of the phosphorus supplied by dicalcium phosphate. When the tests were terminated 10 blood samples were taken from each lot and analyzed for Terramycin. In floor-pen test No. 1, 10 additional blood samples were taken and analyzed for serum calcium, inorganic phosphorus and acid soluble phosphorus.

The results of these tests indicate that:

(1) The substitution of soft phosphate into the diet of growing chicks to replace dicalcium phosphate on an equi-phosphorus basis had no consistent significant effect on either rate of gain or feed conversion.

(2) Soft phosphate substituted into the diet in the manner mentioned above brought about approximately a two-fold potentiation of Terramycin.

(3) Terephthalic acid fed at the .4% level was responsible for a two-fold potentiation of Terramycin.

(4) The combination of soft phosphate and TPA brought about a four-fold potentiating effect indicating that the potentiating effect of these two ingredients is additive.

(5) Neither serum calcium, inorganic phosphorus nor acid soluble phosphate was affected by substituting soft phosphate into the diet at gradient levels for dicalcium phosphate.

(6) The potentiating effect of soft phosphate is not due to its trace mineral components.

(7) Soft phosphate may be used as a potentiating agent for the broad spectrum antibiotics.

(8) Iron depresses Terramycin blood levels, but aluminum does not.

Copies of Complete Experiment on Request

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For inside a bag of today's scientifically blended feeds is the knowledge gained from years of fruitful research . . . at Agricultural Experiment Stations . . . in laboratories . . . on proving farms.

The carefully balanced vitamins, minerals, antibiotics and other health- and growth-promoting ingredients in today's fine feeds help you produce more meat, milk and eggs . . . in less time . . . on less feed . . . and with less risk than even the scientists themselves—until recently—ever dreamed possible.

By putting so many nutritional discoveries into practical form—and by making them available—the feed industry has helped American farmers cut weeks off the time it takes to raise a broiler . . . months off the time it takes to make a market-weight hog, turkey, or beef steer . . . has helped to raise egg production by a hundred eggs per hen, per year.

As America's progressive feed companies bring each new development of science to the farm in a feed bag, they bring to *every* livestock and poultry producer the ability to better, each year, his own best production record for the year before.

As a fast-growing nation looks to America's producers for *still greater* production, you can look to your feed man for the benefits of research that will help make it possible.

From an address by John E. McKeen, President, Chas. Pfizer & Co., In

A salute to an industry with broad shoulders

Today's bag of feed holds more promise of performance and profit for your customer than many of us dreamed possible just a few years ago. And tomorrow's can be even better through the cooperation of the feed industry and its suppliers.

In the past ten years alone, great progress has been made and we are proud to have been a part of it. During this time you have helped us become one of your major suppliers of new products and ideas . . . new fields of science to be formulated into today's bag of feed.

And we have joined with you in many market-building jobs for the industry . . . to help sell the need so you could sell the feed.

Our efforts in this direction are guided by the belief that any supplier willing to share in *your* growth . . . should also be willing to share in the *cost, sweat and responsibility* of promoting this growth.

The ad on the opposite page is an example of this belief. This month it will appear again in leading publications—this time in tribute to your 52nd birthday and the contributions you have made to American agriculture during this time. It is one ad in a 10-year progression of programs designed to help you promote the concept . . . and the markets . . . for your new formula feeds:

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1952 Calf Starters
1953 High-Level Feeds
1954 Pig Pre-starters
1955 Terramycin® Beef Feeds
1956 Extra-Production Laying Feeds
1957 Tran-Q† in Feeds
1958 EGGtober
1959 Life Cycle Feeding
1960 Life Cycle Management

*Brand of oxytetracycline
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not now absorbing the devices that are economically logical. One reason may be lack of capital. Many surveys I have made have shown excellent returns where modernization includes automation, but management was not able to buy it. Lack of understanding of the values of these automation devices may be another reason. I have found that a thorough economic analysis is necessary to illuminate this point to management. One misunderstanding is that automation is a package that is vast, complicated and expensive. Actually, automation comes from a series of components that may or may not be interconnected, all providing a function that leads to a fully automatic plant. Many times the components can be justified within themselves.

Third—Will the industry try to use 1925-quality labor for 1960-quality demands? Plant inspections have revealed automatic devices and instrumentations out of operation merely for lack of some simple repair. Entire automatic panels have reverted to manual operation for lack of understanding of their true value. Additional automation will not solve this problem. With the increased complexity of automation comes the requirement for technician-type personnel trained in the use and maintenance of automation devices. The constant technological developments in manufacturing have raised the quality of manpower. Engineers must first evaluate and design the systems to meet the requirement. Management must provide qualified manpower. Training and supervision must come from operations. All three must work together. Breakdowns are more expensive in the accelerated capacities resulting from automation, and maintenance must be competent to keep all equipment and controls functioning properly. Production mixups in an automated plant are still possible, and the operators must be skilled in scheduling to keep these to a minimum.

Fourth—Can management cope with the greater gambles of obsolescence that exist with automation? If an automated feed mill had been built 15 years ago it would be obsolete today. With the increasing number of ingredients, many of them microingredients, and with the trend to smaller plant size and to shorter runs and special mixes, the opportunities for early obsolescence seem very possible. Feed mixing is moving closer to the farm and becoming more intimately related to it, which is influencing plant design.

Fifth—Can existing production problems be solved so that automation may be possible? Completely dependable bulk flow does not exist in any feed mill, and automation demands dependable flow. Dust conditions requiring sweepers continue to exist and, in a fully automated plant, it would be inconsistent if this condition still existed. The inventory control necessary for an accurate profit and loss statement is still suffering from inaccuracies. Quality control is a luxury in many mills, and this omission would leave one segment missing in the completely automated plant. Protection of the product is another paralleling requirement of automation, and the solution of this becomes a part of the acceptance of automation.

The feed industry has gone a long way toward handling large tonnages with a small force. In 1950, I predicted that in the near future one man would be putting out 2 tons of feed per hour, an eyebrow-raising statement at that time. Today, even with increased complications of feed manufacturing, we are reaching that ratio; some claims go beyond that.

CONCLUSIONS—In conclusion, I have these observations to make:

The feed industry as a whole has made partial use of many automation devices, but universal and effective use has a long way to go.

Many automatic devices are available to the feed industry. Newer automatic devices are in the development stages for the feed industry. Devices are constantly being developed in other industries that will be useful to the feed industry. In addition to development of automatic devices for our own industry, it will be necessary to seek out those developed by other industries, and modify them and assimilate them as rapidly as possible for feed mill application.

Some devices cannot be utilized profitably in a feed plant operation because of poor economic return or because of inherent difficulties of application, and studies must be made to determine where this exists.

One of the most important values of automation lies in the fact that the machine is more dependable than the man.

Automation changes the manpower problem from quantity to quality. Therefore, we do not solve our manpower problems by automation; we merely change them.

New Sales Manager Appointed by Ripco

OXFORD, PA.—R. K. Bennethum, president of Ripco Air Systems, Oxford, Pa., manufacturer of bulk feed handling equipment, announces the promotion of James S. Steele to sales manager.

For the past year, Mr. Steele has been promoting air delivery of bulk feed throughout the eastern U.S. and has set up a nationwide network of representatives for Ripco.

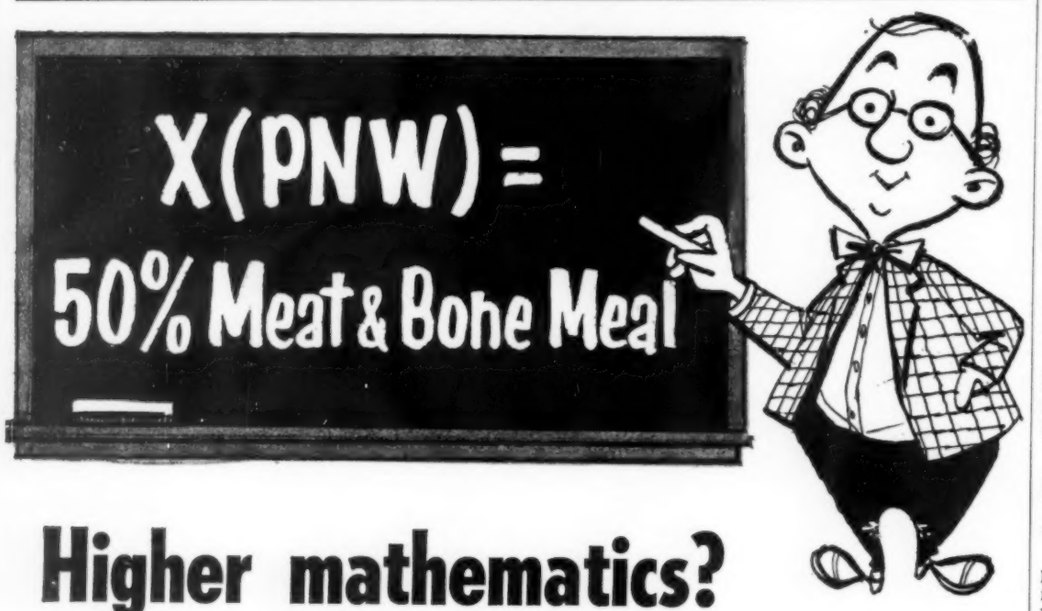
"The wide acceptance of air handling of bulk commodities has resulted in a sharp increase in sales activity for Ripco," says Mr. Bennethum.

Training School

GRAND FORKS, N.D. — Members of Lystad Fumigator's recently attended a week-long training program in grain sanitation and grain fumigation here, designed to inform them of recent developments in these fields.

One day of the program was held at the University of North Dakota, with the sessions under the direction of Dr. G. C. Wheeler, head of the department of biological sciences. The program dealt with insect identification, their life cycles and habits. Also discussed was mathematics relating to grain sanitation, aeration and fumigation. Howard Johnson, chief engineer for Hot Spot Detector, Inc., directed a half-day study of grain aeration.

J. Carl Dawson and Ray Millard, Ferguson Fumigants, Inc., led discussion on recent experimental results of Dawson 37 fumigant and developments in the bulk handling and bulk application of this fumigant. Reviewed in detail were the past year's developments in the direct application of the fumigant to large bins or bin sites involving several million bushels.



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Grain Drying With Solar-Heated Air Successful—USDA

WASHINGTON — Experimental success in grain-drying with solar-heated air has been reported by the U.S. Department of Agriculture.

Corn was dried more quickly and effectively with a solar-heated air system than with a conventional unheated-air system in tests by engineers of the Agricultural Research Service and the Kansas Agricultural Experiment Station. Fans in the solar system used 50% less electric power than in the conventional system.

Moisture content of 100 bu. of corn was reduced from 17 to 11% after exposure to solar-heated air for one week. Moisture in another 100 bu. of the same corn exposed to unheated air for a week was reduced to 12%, but drying was uneven and portions of the top layer contained as much as 14% moisture. Over-drying occurred in the bottom layer of both batches, but was a little greater in the solar-heated, air-dried corn.

Ralph I. Lipper of the Kansas station and Chester P. Davis, Jr., of ARS, who conducted the experiments at Manhattan, Kansas, offer these preliminary observations:

1. Grain containing up to 18% moisture apparently can be dried adequately in a solar-heated-air system even when the sun shines only 3.5 to 6.5 hours a day.

2. A solar-heated air set up uses only about half the electricity needed for moving unheated air. This will be true whether air flow is continuous or fans are controlled to operate only at intervals when relative humidity is less than 85%.

3. For in-storage drying, increasing the flow of solar-heated air above that normally recommended for unheated air systems is unlikely to be profitable. Greatly increased air flow usually speeds drying, but adds to electricity costs.

One side of the experimental solar dryer, built mostly of plywood and shaped like an inverted "V" at each end, was covered with clear plastic. Black corrugated sheet metal was placed beneath the plastic, forming an air passage and heat collector. Air enters this passage near the top of the dryer, circulates down for warming by the sun, and then moves under and up through the corn before being discharged.

On the unheated-air dryer, an aluminum-painted plywood panel was used instead of the plastic and sheet-metal heat collector. In other respects, both dryers were similar and delivered air continuously at a rate of 4 cu. ft. per minute.

Ohio Poultrymen Meet To Discuss Problems

COLUMBUS, OHIO — Poultrymen of Ohio are getting together at local meetings to discuss ways to maintain their $100 million industry in the face of outside competition.

The Ohio Poultry Assn. and the Ohio Agricultural Extension Service are conducting these meetings to talk over with poultrymen some of the industry's current problems.

Speakers for the meetings include Drs. Paul Clayton and Glyde A. Marsh, both Ohio State University extension poultry specialists; and Bruce R. Davisson, extension secretary of the Ohio Poultry Assn. They are discussing such topics as the situation of the Ohio egg producer, production practices for profits in 1960 and self-help possibilities for the egg production industry.

CHEMICALS MEETING

GROVETON, N.H.—"Chemicals in Agriculture" was the theme at the recent annual meeting of the Coos County Soil Conservation District in Groveton. Speakers at the meeting included Joel Nordholm, district sales representative of the American Cyanamid Co., discussing "Chemicals in Crop Production," and Dr. Louis A. Shor, American Cyanamid Co., "Chemicals in Livestock Production"; Thomas Elliot, Maine sales manager for American Cyanamid, and Francis Marseille, northern New Hampshire and Vermont fieldman for the Eastern States Farmers Exchange, participated in a panel discussion.

PRODUCER INVESTMENT—Ralph J. Thomas (left), president, Poultry & Egg National Board, receives a check of more than $2,000 from William Lee Brown of the Nulaid Farmers Assn., San Leandro, Cal., during the 20th annual PENB meeting recently in Chicago. The check represents one month's producer investment for the Nulaid association.

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FIVE COLUMBIAN TALL TANKS quickly and economically expanded this grain elevator in Willmar, Minn. by more than 77,000 bu. The tanks are 40′ high, 24′ diameter, with max. cap. of 15,570 bu. ea. The Columbian 6,500 bu. corrugated AAA Granary in foreground is 16′ high, 24′ diameter.

COLUMBIAN TALL TANKS make up this compact small elevator at Browning, Mo., with total capacity of 52,000 bu. plus. Main 12,540 bu. max. cap. tanks are 32′ high, 24′ diameter; tanks mounted above scale house are 24′ high, 18′ diameter, have 5,290 max. cap. each.

TILDEN GRAIN CO., Tilden, Nebraska, added 24′ x 24′ Columbian BIG BINS to its Columbian rigid frame flat storage building, for extra capacity. Bins have 9,520 max. cap. each. Elevator leg from Columbian drive-through scale house permits fast spouting to building and tank batteries on both sides.

GRAIN STORAGE, DRYING, BULK FEED installation makes Heinzman Bros. Dairy Farm feeding operations at Phillips, Neb., most efficient. Incoming grain is elevated from underground pit to 9′, six-ring Columbian Bulk Feed unit at right, before going through dryer, center; Columbian 24′ x 24′ Big Bins, with 9,520 max. cap. each, are used for storage and Columbian Bulk Feed unit at left for transfer of conditioned grain to feed trucks

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North Carolina Reports Study of On-the-Farm Feed Processing

By GREGG PUSTER
Special Correspondent

RALEIGH, N.C.—With more farmers in North Carolina showing interest in mixing feed on the farm, some commercial feed processors have taken on a line of grinding and mixing equipment with the hope that they can capture the supplement market.

A recent study of on-the-farm feed mill operation costs by E. S. Coates and R. M. Ritchie, agricultural engineering specialists with the North Carolina Extension Service, indicated that many farmers are receiving the information about various sizes of farm mill operations "hopefully, but with reservations about whether it could be actually applied to their own farm operations."

(A report on this study is presented here not as necessarily advocating or predicting marked increases in on-the-farm feed processing, but to inform feed men of developments in this field and to point out some of the material on the subject which is being prepared for farmers. Feed men may or may not have views and data which differ from the information reported here.)

"As farmer interest in feed processing increased, following a series of demonstrations in about 50 counties," Mr. Coates said, "the commercial feed processors began to realize there was profit available to the farmer who could process his own feed economically.

"It was this interest that led us to an economic study to see just what size operation can justify a feed processing facility of various sizes.

"Our analysis was made on the comparison of the farmer owning his own equipment, with the custom grinding and mixing charges which were made by the local mill or feed handler."

Mr. Coates said the major problem that now faces the farmer who plans to process and handle his own feed is not the formulation of feeds but the efficiency of his entire feed processing and handling equipment.

If a farmer does not plan his facility as a complete system, he continued, it is quite possible that his labor cost and repair cost will be so great that he could not justify owning his own processing equipment.

Formulation of feed is not so much of a problem, the study indicated, since any livestock or poultry producer can buy a manufactured supplement with all of the minor elements included.

Where is the break-even point for a farmer to start his own feed mixing program?

The Coates-Ritchie study set up a pattern of fixed and variable costs, utilizing alternate processes, with each showing the volume of feed and the number of animal units required to make the plan profitable, or less costly than using custom mix services.

The study did not attempt to compare the costs of on-the-farm mixing with the prices paid for a complete ration, since there were so many variables, but Mr. Coates said that in almost every case, the farmer with his own grinding and mixing facilities would have a much greater cost advantage over his neighbor who purchased the complete commercial ration.

For a swine feeding operation feed consumption, including the maintenance of the breeding herd, was assumed to be 790.5 lb. of feed per 200 lb. hog sold.

The volume of feed necessary was estimated at 33.8 tons—the amount of feed, approximately, consumed by 86 market hogs or a breeding herd of six sows.

The dairy farmer, the report said, needs 68.8 tons or about 45.6 cows to justify his own mill, based on a volume of feed of 3,566 lb. per cow, of which 3,016 lb. must be ground and the total amount mixed.

The beef cattlemen, on the assumption of steers purchased at 450 lb. and sold at 1,000 lb., would require 68.8 tons of feed per year or 47.8 steers.

In computing the break-even volume for a commercial layer flock, feed consumption was based on 19 dozen eggs per hen and 4.7 lb. of feed per dozen eggs, which amounts to 89.3 lb. of feed per hen per year. The study estimated that 126.26 tons or 2,828 layers were needed to justify the investment.

It is interesting to note that the study made no computation for mixing broiler feed on the farm.

"Since about 95% of North Carolina broilers are produced under contract," the study says, "it is not likely that grinding and mixing of feed would be practical. However, producers who have a market for their birds and can finance feed purchases should consider this as a means of cutting costs."

Disadvantages

The disadvantages of on-the-farm mixing as reported in the study were:

(1) The greatest problem will be the farmer's ability to properly blend the ingredients. This is especially important in mixing poultry feed where drugs and medicants must be added in exacting quantities. This problem may be overcome somewhat if it is possible to purchase a "package" mix containing supplement, drugs, etc. Then this would be mixed with the farmer's grain for a complete ration.

(2) Some farmers may install grinding and mixing equipment and use them only part of the time. Thus, in critical labor periods (tobacco harvesting time, as an example), the equipment may be standing idle and the farmer would be hauling his feed to a custom operator.

(3) A third disadvantage listed pointed out that experiments have indicated that the cost of feeding for some types of livestock is cheaper with a free-choice method. Actually, the difference in cost is the processing charge.

Another factor to be considered is that some farmers may not have

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capital to invest in grinding and mixing equipment or may be able to allocate capital to some other use, fertilizer for example, that will yield a greater return.

And finally, it was said, some farmers may be able to buy feed on a cooperative basis in carload lots and reduce their costs per ton below the home grinding and mixing cost. The increased use of bulk feeding could play an important part here. It is also possible that the custom rate could be reduced either because of more livestock in North Carolina which would give the mills more volume, or the mills cutting their charge to meet competition from farmer installations.

In basing costs of various phases of feed processing, Mr. Coates used the custom rate figure of 35¢ cwt., or $7 a ton. He said this cost in many areas of North Carolina was found to be 40 to 45¢ cwt., thus making home grinding and mixing more favorable than the study indicated.

Following are some tabulations in the North Carolina study:

SWINE — An automatic mix-mill was recommended for swine producers. Fixed costs per year for this installation amounted to $233.37. The only variable cost was a charge of 10¢ per ton for electrical power. No labor was required since all feed is handled by augers.

In computing the break-even volume, it was assumed that 14.5 hogs would be marketed per sow. Feed consumption, including maintenance of the breeding herd, was 790.5 lb. of feed (0.39525 ton) per 200 lb. hog sold.

The volume of feed necessary to justify purchasing this equipment was estimated at 33.8 tons per year. This is approximately the amount of feed consumed by 86 market hogs or a breeding herd of six sows.

(Automatic grinding, mixing and carrying to feeders.)

A. Capital Investment	
1. Equipment (10-year life)	
a. Mix-all with augers, hopper bottom bins, bin switches, etc.	$ 975.00
b. 4" auger to feeders, 80'..	150.00
c. Electrical installation	150.00
2. Building (20 year life)	
a. 10'x16' shed with supplement storage	300.00
Total investment	$1,575.00
B. Maintenance, annual	20.00
C. Power cost per ton	.10
D. Labor—average 10 minutes per day	
E. Capacity—approximately 900 lb. per hour	

DAIRY — Two installations for grinding and mixing feed for dairy cows were considered. A hammer mill with a scale mounted mixer would have annual fixed costs of $425.27. Operating costs are: tractor power 43¾¢ per ton; gasoline engine, 4¢ per ton, and labor, 37½¢ per ton.

Feed requirements were based on 3,566 lb. per cow. Of this amount, 3,016 lb. must be ground and the total amount mixed.

The volume of feed necessary to justify the investment was estimated at 68.8 tons or about 45.6 cows.

The second installation was a portable hammer mill and a mixer-trailer. Annual fixed cost was $314.60. Variable costs were: tractor power, $0.583 per ton; gasoline engine for auger, $0.02 per ton, and labor, $0.50 per ton.

The break-even volume with this equipment is approximately 53.3 tons of feed, or 35.3 cows.

(Dairy or Beef Cattle — hammer mill (tractor powered), scale mounted mixer, grinding ear corn and small grain from ground level storage, and delivering to cattle with self-unloading trailer.)

A. Capital Investment	
1. Equipment (10-year life)	
a. Hammer mill .....$	360.00
b. Ore ton mixer and motor	800.00
c. Scales	275.00
d. 4" auger for small grain..	60.00
e. Ear corn drag	200.00
motor	50.00
f. 6" auger for ground feed..	150.00
g. Electrical wiring	200.00
h. Portion of tractor	....
Total equipment .....$	2,195.00
2. Building (20-year life)	
a. For housing equipment, 20'x20'	600.00
Total investment .....$	2,795.00
B. Maintenance, annual	
C. Power cost per ton—mixer	
D. Labor—one man to operate—0.5 man-hour per ton	
E. Capacity—approximately 2 tons per hour	

(Portable hammer mill, grinding from cribs or storage bins, mixing by

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mixer, trailer used to haul grain to cattle.)

A. Capital investment
1. Equipment (10-year life)
a. Hammer mill, portable PTO model ..... $ 550.00
b. Mixer-trailer 600.00
c. 4" auger for small grain with gasoline engine 80.00
d. Drag-elevator for ear corn, gasoline engine 250.00
e. Portion of two tractors... ....
2. No buildings required

Total investment $1,480.00

B. Maintenance, annual
C. Power cost per ton (auger, drag, gasoline engines) ..... .02
D. Labor (one man to operate)—0.67 man-hour per ton
E. Capacity—approximately 1½ tons per hour

BEEF (See Dairy Installations)—The same two installations were recommended for beef producers as were used for dairy animals. Costs, both fixed and variable, remain the same.

In making the analysis, it was assumed that feeder steers were purchased at 450 lb. and sold at 1,000 lb. These animals were fed 3,128 lb. of feed per steer, of which 2,880 lb. were ground.

To justify purchase of a hammer mill and scale mounted mixer, approximately 68.8 tons of feed per year or 47.8 steers are needed.

The beef producer needs 53.3 tons of feed or 37 steers to justify the purchase of the portable hammer mill and mixer-trailer arrangement.

LAYING HENS—Two installations for grinding and mixing feed for layers were considered. Annual overhead costs amounted to $825.75 for a combination hammer mill-mixer with a self-unloading bulk trailer. Variable costs would include: electricity, 16¢ per ton, and labor, 30¢ per ton.

In computing the break-even volume, feed consumption was based on 19 dozen eggs per hen and 4.7 lb. of feed per dozen eggs. This amounts to 89.3 lb. of feed per hen per year. It was estimated that 126.26 tons or 2,828 layers were needed to justify the investment.

The second installation was an automatic mix-mill. Just as with swine, the total amount of feed that must be run through this machine annually was 33.8 tons. This is the equivalent of 757 birds.

(Combination hammer mill - mixer with electric power, feed delivered to houses in self-unloading bulk trailer.)

A. Capital investment
1. Equipment (10-year life)
a. Hammer mill, mixer, scale hopper with motors $2,500.00
b. 6" auger to overhead bin with ground feed 150.00
c. Self-unloading trailer 600.00
d. Electrical wiring 300.00

Total equipment $3,450.00

2. Building (20-year life)
a. One floor, 24'x30' $1,100.00
B. Maintenance, annual 50.00
C. Power cost per ton ..... .16
D. Labor (one man to operate) 0.4 man-hour per ton
E. Capacity—approximately 2½ tons per hour

(Assuming use of pre-mixed supplement.)

A. Capital investment
1. Equipment (10-year life)
a. Mix-mill with augers, hopper bottom bins, bin switches ..... $ 975.00
b. 4" auger to feeders, 80'.. 150.00
c. Electrical installation 150.00
2. Building (20-year life)
a. 10'x10' shed with supplement storage 300.00

Total investment $1,575.00

B. Maintenance, annual ..... $ 20.00
C. Power cost per ton ..... .10
D. Labor—average 10 minutes per day
E. Capacity—approximately 800 lb. per hour

Interest was charged at 6% on one half the original cost.

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CANADIAN OFFICER NAMED

OTTAWA — David B. Young, Edmonton, Alta., has been appointed officer in charge of sheep and beef cattle production policies for the livestock division Canada Department of Agriculture.

Mr. Young, who will be headquartered in Ottawa, is a past president of the western section, Canadian Society of Animal Production.

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Adjustment of Characteristics of Eggs May Up Nutritional Value, Scientist Says

LAS VEGAS—Adjustment of some characteristics of eggs to make eggs with maximum nutritional value will come some day in the future, according to a University of California poultry department scientist.

Dr. F. W. Hill, head of the poultry husbandry department at Davis, Cal., told a Pacific Dairy & Poultry Assn. convention gathering recently that, some day in the future, "food scientists will look upon the egg as a mixture of biochemical substances with certain nutritional and physical properties which fill certain needs in human feeding formulas."

(An earlier convention story appeared in Feedstuffs, April 16.)

"One of the nutritional challenges to the egg producing industry is the production of egg with the highest possible value to the human diet," he declared.

He said that by appropriate modification of the hen's diet, the amounts of critical fatty acids in egg fat can be increased, and "this could be one of the best ways to obtain more liberal amounts of these substances in the American diet."

He noted that fatty acids in nutrition have been one of the interesting areas of intensive current research.

"It has been known for many years that certain fatty acids cannot be made by the animal body," Dr. Hill said. "A lack of these substances (the so-called essential fatty acids) in experimental animals leads to poor health. There is no doubt that humans also require these substances, but the amounts needed are not known. The typical market egg today supplies significant amounts of essential fatty acids to the human diet."

Increase Contribution

He noted that "to go along with the nutritionally superb protein of the egg, a complement of vitamins and other valuable components purposely supplied at generous levels would increase the already substantial contribution which eggs make to the human diet."

The hen is a smooth running production unit, he said, admirably developed by genetic selection to a high rate of product output. The basic function of the hen is to make a nutritionally valuable food from materials which are unsuitable for human use. The efficiency of the hen in making this conversion is remarkably high, he noted.

"Some of the components of the egg can be influenced by the nature of the hen's diet—most of them cannot," he said. "Components which are unaffected by the hen's diet are the amounts of water, calories, protein, fat and most minerals present in the egg. Components which can be affected by the diet of the hen are the total size, the amounts of certain unsaturated fatty acids (collectively known as essential fatty acids) vitamins and certain trace minerals."

Poultry Inspection

Frank E. Blood, deputy director of the poultry division, Agricultural Marketing Service, reviewed some experiences during the first year of operations under the Poultry Products Inspection Act.

Among other things, he talked of some of the problems encountered, making more efficient use of inspection personnel and the high condemnations.

He said that in 1958, AMS initiated several rather extensive formal training programs to train more inspectors than were already involved in the voluntary inspection programs.

Among the procedures followed during 1959 to expand the knowledge of inspection personnel were arranging weeeknd meetings for the inspectors-in-charge with technical supervisors to help establish uniform interpretations of the various condemnation criteria among all inspectors, arranging technical supervisor meetings to review the inspection program and emphasizing the training of the inspection staff at processing plants.

Mr. Blood pointed out AMS is seeking the processors' cooperation in making efficient use of inspection personnel. He noted the problem of stand-by time. In some months during 1959 it ran as high as 16%.

He cited several instances where plants may operate with 10 inspectors for 32 hours a week. "This means that in a plant of this kind, 40 hours of stand-by time for our personnel will accumulate in such a week," Mr. Blood said. "We hope that, in time, such a plant can adjust its operations to use eight inspectors for 40 hours a week, and thereby eliminate the cost of stand-by time to the American taxpayer. I doubt that we can continue to afford the luxury of an operation such as this one."

Maximum Use

He stressed the necessity of developing a program to make maximum use of the inspection staff. "I am sure we can do so if we work in the direction of adjusting operations over time rather than by issuing decrees requiring precipitous action."

He said that his department has been very concerned about the level of condemnations in isolated flocks and has taken several steps during the past year to attempt to assist in minimizing these losses.

He told of a visit of a member of the Agricultural Research Service and the AMS staff to 55 farms from which flocks had originated and condemnations were exceptionally high. "We found, through this survey, that in almost every case, one or more of the recommended good husbandry practices had been neglected."

During 1959, he pointed out, 41 million pounds of frying chickens, New York dressed weight, were condemned as not suitable for human food. This total represented 1.7% of this class of poultry inspected.

"Several observations," he said, "concerning condemnations might be of value:

"First, the bulk of the condemned fryers originates on a relatively small number of producing units.

"Second, in areas where a relatively large volume of the poultry produced has been processed under inspection over previous years, condemnations are relatively low for the area as a whole.

"Third, there seems to be some geographical significance to the levels of condemnations. For example, a belt in southern Texas, Arkansas, Louisiana and Mississippi seems to have a higher incidence of condemnations than even in the northern parts of these states.

"Fourth, indications are clear that the health condition of poultry produced in the same house may vary widely. Results from tests which we have run show that condemnations on trucks of poultry coming from the same house vary greatly."

POULTRY GROUP OFFICIALS—The Pacific Dairy & Poultry Assn. named these officers and directors at its annual meeting recently in Las Vegas (left to right): standing, Joseph A. Heslin, Southern California Poultry Co., Los Angeles, and Western Turkey Packing Co., Fresno, Cal.; Ralph J. Ahl, Nulaid Farmers Assn., San Leandro, Cal.; Morris Polack, Acme Poultry Co., Seattle, Wash.; George Kempf, Desert Brand Foods, Phoenix, Ariz.; H. J. Secrest, dairy poultry and margarine division, Armour & Co., South San Francisco, Cal.; L. R. Davis, vice president of the PDPA, Idaho Egg Producers, Caldwell, Idaho, and John E. Wilson, Floden-Button Co., Modesto, Cal.; seated, E. R. Wyllie, treasurer of PDPA, Monterey Cheese Co., San Francisco; J. R. Garrett, Norbest Turkey Growers Assn., Salt Lake City, Utah; F. W. Vickrey, president of PDPA, Nicholas Turkey Breeding Farms, Sonoma, Cal.; Walter Zolezzi, O'Brien, Spotorno & Mitchell, San Francisco, and Drue Willardson, immediate past president of PDPA, Willardson Co., Inc., Los Angeles.

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LOUISVILLE, KY. — Aubrey Feed Mills, Louisville, has obtained a building permit for a $25,000 addition to its feed mill. The new addition will be a sacked storage space for loading sacked products on trucks.

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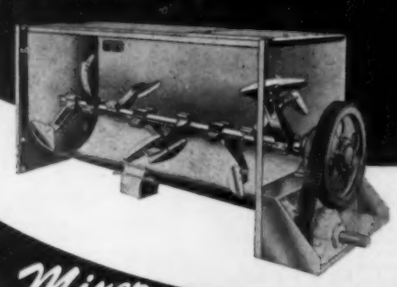

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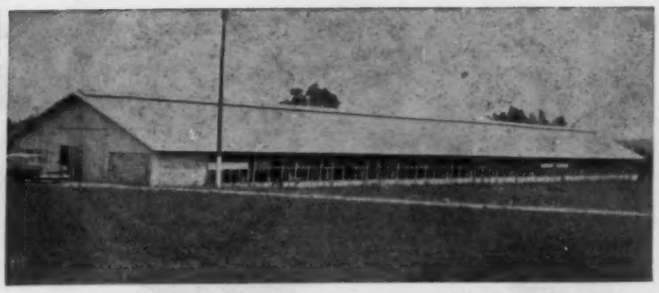

CONTRACT EGG FARMING—A typical laying house in a contract egg production program. The physical set-up of most of the houses is very good, but the management often is not satisfactory. One major problem is that of cracked eggs. Five to 8% cracks is quite common, while about 3% should be the maximum.

Contract Egg Farming in Georgia Undergoes Considerable Change

"Contract egg farming certainly will not control the market egg business as broiler contracting controls the broiler industry."

By Dewey McNiece
Georgia Extension Poultryman

Contract egg farming is decreasing in importance in Georgia. There are probably two major reasons for this —low egg prices and inadequate flock management by the egg producers. Many of the contracts did not contain penalty and incentive clauses which is another factor in the difficulties being experienced.

One of the egg contractors, a feed company, mentioned several advantages to contract egg farming but then very quickly discussed some definite disadvantages. The advantages as enumerated by this company are: (1) less capital is needed by the farmer, (2) one can get a lot of eggs in a hurry, (3) the egg quality is usually very good, and (4) one can get eggs on a regular schedule.

According to this company, it is very easy to get any number of producers for a contract egg program since it looks very attractive on the surface. The problem comes later when the poultryman finds it requires 8 to 10 hours work each day 7 days a week, if he has an enterprise large enough to pay him a sufficient amount for a reasonable living.

EDITOR'S NOTE: Dewey McNiece, author of the accompanying article, is extension poultryman with the Agricultural Extension Service at the University of Georgia, Athens. He has been in this position since Oct. 1, 1956. Prior to this, he was extension poultryman and project leader in the poultry department at Cornell University, Ithaca, N.Y., from 1953 to 1956. He attended the University of Arkansas, University of Georgia, Cornell University and Louisiana State University. Mr. McNiece received his B.S. and M.S. degrees from Louisiana State and at present is working toward a Ph.D. degree from the same institution.

MECHANIZATION — Many of the houses used in contract egg production make good use of bulk feed tanks and mechanical feeding systems. A new trend taking shape in contract programs is dealer ownership of both housing and equipment as well as the birds.

Some of the other problems involved in a contract egg program are: (1) the length of cycle is quite long, approximately 21 months compared with about 9 weeks in broiler contracting, (2) it is difficult to secure good poultrymen, (3) difficult to supervise and control, and (4) capital is tied up too long.

From observations over the state, it seems that considerably more problems arise in a contract egg program where the egg producer relies on cheap labor to do the work. One contract egg farmer using hired labor to care for the birds is getting approximately 15% cracks.

Incentives and penalties in a program of this type do not seem to work too well, either.

Almost without exception, dealers agree that penalties and bonuses are necessary if a contract is to work at all—but some feel that it is impossible to include an incentive payment large enough to cause the poultryman to do an adequate job. They feel that it is absolutely necessary that the egg producers be hand-picked. Even then, some additional culling often has to be done.

Penalty, Incentive Clauses

A few more of the dealers are including penalty and incentive clauses in their contracts. Some have even changed their contract during the life of a flock of birds, but this is quite difficult to do and still keep the poultryman happy. When a dealer changes the contract before its predetermined duration, the poultryman feels he isn't under much obligation. One

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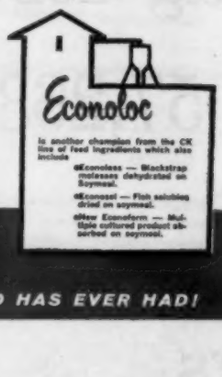
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grower stated that he thought he would just tell the dealer to come and pick up the hens on his farm after the contract was changed. They feel that if the dealer does not live up to his agreement, then they are under no obligation to do so either. I sometimes feel that the dealer does not get the true feelings of the egg producers under the above conditions. He should give some very serious thought to the type contract he will use so it will not need to be changed.

Sometimes a change in the contract seems to work quite well. This is true more often if a poultryman gets paid a certain amount per dozen than when he receives a set sum per week or per year. When a contract is changed and reduces the payment a farmer would get from say $1 per hen per year to 75¢, the poultryman isn't as likely to do a better job. But, a better job might result if the contract pays, for example, 5¢ per dozen for all eggs and then is changed to pay 5¢ per dozen for all clean, unbroken eggs and no payment or only half payment for dirty or cracked eggs.

One dealer cited the following example to show what effect a penalty clause of no payment for cracks, dirties and stains would have. The dealer had been getting too many stained and dirty eggs and had attempted on numerous occasions to get the poultryman to do a better job of cleaning eggs. The poultryman was receiving 5¢ per dozen under the usual contract conditions regardless of whether the eggs were clean or not. When the contract was changed as described above, the poultryman bought an egg washer and started doing a very good cleaning job.

Cracks Excessive

Inadequate flock management has been quite evident on many of the farms I have visited. One of the major problems is the excessive number of cracked eggs that are being delivered to the dealers. Five to 8% cracks is quite common, and as I mentioned above, one producer has been having as many as 15%. As we all know, the maximum should be about 3%.

Even though the trend in Georgia at the present time is for a decrease in egg contracting, we have a lot of talk about contracting. We have one dealer increasing the number of hens he has out on contract to about 100,000. Other dealers with from 15,000 to 40,000 hens on contract are also contemplating an increase. One of the dealers now increasing the number of hens he has out on contract has some new ideas on what makes egg contracting successful.

One of his requirements is that the farmer must not have been in the poultry business previously. He wants someone that does not have to "unlearn" (as he puts it) some management practices that should be changed. The type of equipment, type of house, arrangement of equipment and other management practices are specified in the contract. The payment plan includes a base amount tied to the wholesale price of eggs with a bonus based on egg production and feed efficiency. Mortality isn't mentioned in the contract. The dealer feels this will be reflected in the egg production per hen as it is figured on a hen-housed basis.

Another large egg contractor has changed his contract recently with the base being lowered from 6¢ to 4¢ per dozen. Only 2¢ per dozen is paid for dirty eggs. All eggs must be dry cleaned. In this contract, the egg producer grows the replacement pullets from day-old and receives only the base price per dozen plus the bonus payments that will be listed below.

Contract Provisions

The contract discussed above has the following provisions:

Beginning Jan. 1, 1959, for chicks started and until further notice, the following provisions will prevail:

1. Producer will receive a base price of 4¢ per dozen on all eggs produced.
2. Bonuses will be paid as follows:

MORTALITY:

Add ½¢ per dozen if mortality is less than 25%.

Add 1¢ per dozen if mortality is less than 20%.

Add 1½¢ per dozen if mortality is less than 15%.

Add 2¢ per dozen if mortality is less than 10%.

(Mortality will be figured and paid on the basis of life of flock and upon slaughter.)

NUMBER OF EGGS LAID IN 12-MONTH PERIOD:

If total number of eggs produced averages more than 220 eggs per hen—add ½¢ per dozen.

If total number of eggs produced averages more than 230 eggs per hen—add 1¢ per dozen.

If total number of eggs produced averages more than 240 eggs per hen—add 1½¢ per dozen.

If total number of eggs produced

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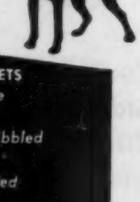

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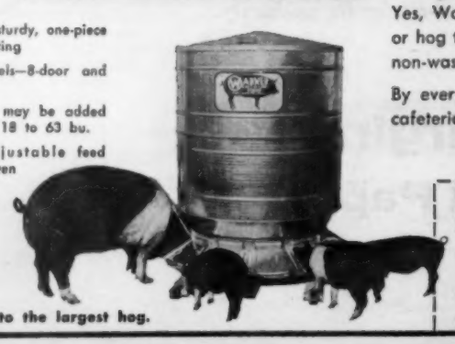

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There are at least seven tocopherols which have some vitamin E activity. The most effective biologically is "alpha." That's what is in *Myvamix Vitamin E Feed Supplement*. (Only 10 to 15% of the tocopherols in corn is "alpha"—the rest is "gamma," one of the least effective of all.)

averages more than 250 eggs per hen—add 2¢ per dozen.

FEED CONSUMPTION FOR 18-MONTH PERIOD:

If average feed used is less than 130 lb. per hen, add ½¢ per dozen.

If average feed used is less than 125 lb. per hen, add 1¢ per dozen.

If average feed used is less than 120 lb. per hen, add 1½¢ per dozen.

If average feed used is less than 115 lb. per hen, add 2¢ per dozen.

Bonuses will be paid on each of the three requirements and, of course, a perfect job would total 10¢ per dozen.

This is an agreement between..... Company, and....., regarding the raising to maturity of..... laying hens and maintenance of said hens throughout a laying period of one year.

OBLIGATIONS OF ..... COMPANY:

1. Baby chicks, feed, and medicine will be furnished to bring the chicks to maturity and their maintenance during their laying period.
2. Four cents per dozen will be paid on all clean eggs produced during the laying period; two cents per dozen for dirty eggs.
3. Cases will be furnished in which eggs are to be packed.
4. Bonus will be paid according to schedule when hens are liquidated.
5. Eggs and hens will be picked up at the project.

OBLIGATIONS OF THE PRODUCER AS LISTED ABOVE:

1. Housing of proper design will be furnished by raiser and maintained for laying flock.
2. House will contain proper nests and other equipment to care for hens and eggs produced.
3. Chicks will be properly cared for to the laying period and for the duration of laying period.
4. Care will be taken to keep eggs clean and protected from breakage. Should any eggs become dirty, same will be dry cleaned.
5. Houses will be properly ventilated and heated for brooding.
6. All eggs produced will be delivered and should any of them be retained for home use, the same will be paid for at price agreed with field representative.
7. Sufficient time will be given to properly attend chicks and flocks.
8. Labor will be furnished to load eggs and hens when picked up.
9. Sufficient range shelters will be provided for growing pullets.
10. Suitable driveways will be maintained for delivery of bulk feed.

Chicks and laying hens together with all eggs produced are the property of ..... Co. It is further understood that the continuing of this project of raising chicks to maturity and the laying period will be subject to the will of ..... Co. Should the Company decide that due to health or improper care of the flock that it would be inadvisable to continue this project when egg production is under 50%, they have option of calling for chicks or poultry for transportation to the Company's plant. It is understood that the Company will continue the project through the full laying period provided the producer faithfully carries out the conditions of this contract and maintains the flock in good health, excluding customary setbacks.

Easy to Understand

The above contract is very brief and easy to understand. These items are certainly desirable in a contract.

Another contract pays the poultryman 1¢ per bird per week to 24 weeks and 2¢ per bird per week after 24 weeks until the hens are sold. The poultryman provides the house, equipment, litter, brooder, labor and cooler for eggs. The company provides the sexed pullet chicks, all feed and medication. There is a provision in the contract that the poultryman would receive one-half of the net profits above all expenses including the amount paid to him.

Other contracts that have similar stipulations as to what the dealer and poultrymen will furnish are advisable when ready to lay pullets are provided the poultryman, 5¢ per dozen or possibly $1 per hen per year. As was mentioned above, many are being changed at the present time to include penalty clauses and usually incentive clauses.

Choose Growers Carefully

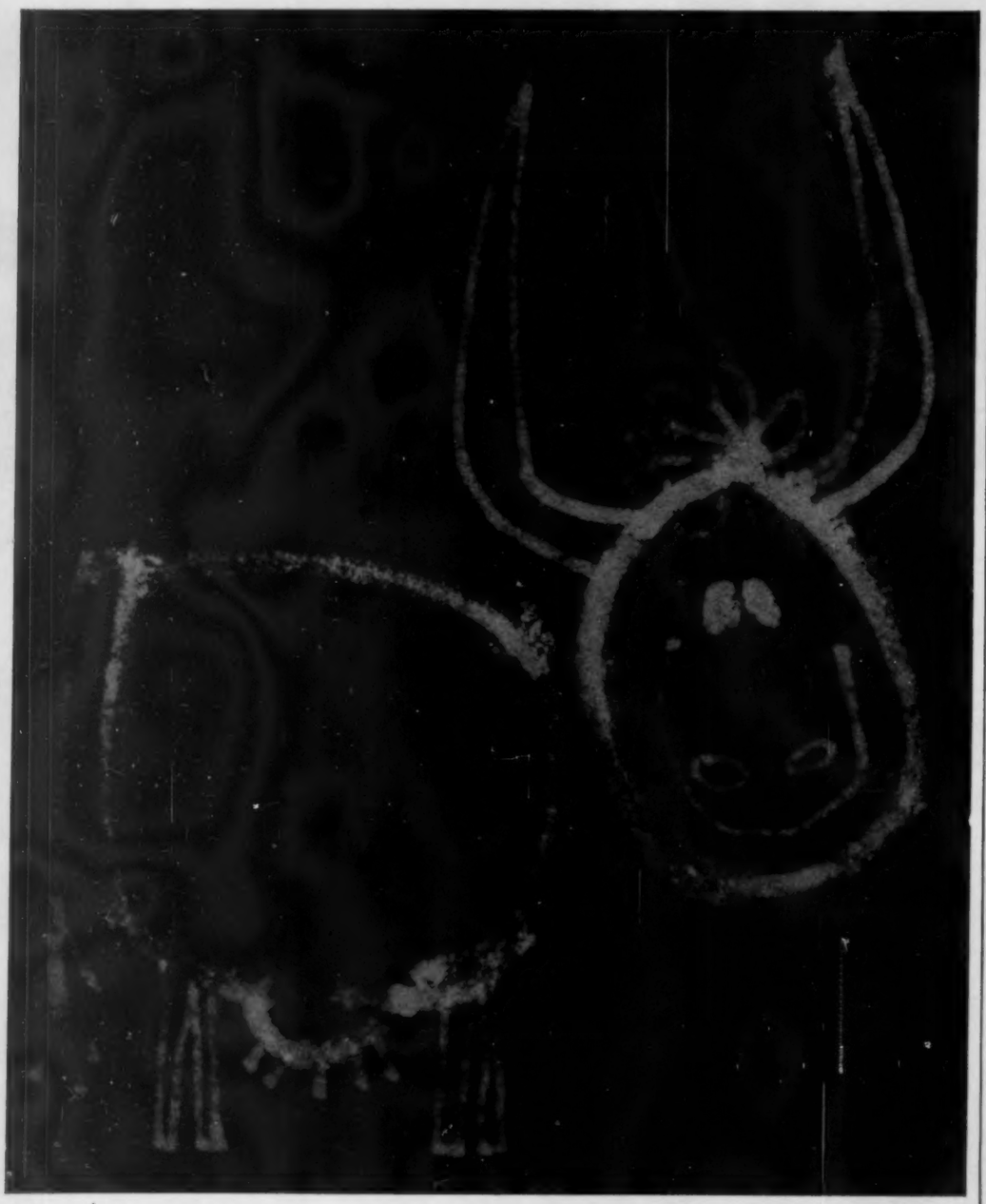
The manager of one of the most successful contract egg programs in the state said he thought two of the most important items include being selective in choosing growers and having your own marketing organization. He also considers the bonus payment and penalties as important factors.

Another trend that seems to be developing is dealer ownership of houses and equipment. This, of course, means that the dealer will have considerably more money invested in the program. It is doubtful if many of the dealers in Georgia will start a very large operation of this kind.

It seems there are several prerequisites to a successful contract egg program. The dealer must be very selective in picking the farmer to put on the program. The farmer must be honest and be in a position to do most, if not all, of the work with the chickens. There must be incentive and penalty clauses included in the contract. (These will be helpful but certainly will not take the place of an honest, conscientious farmer.) The contract should be prepared carefully enough so that it will not need to be changed during the life of the flock. Being able to do your own marketing is helpful, but not necessary if one has a proper tie-in with an egg dealer.

From the observations I have made over the state, it seems that the independent producer does not have too much to be concerned about with a contract egg program. The dealers will certainly supervise the contract egg flocks better than they are now doing, but they can only compete with independent growers as the independent growers compete among themselves.

Contract egg farming certainly will not control the market egg business as broiler contracting controls the broiler industry.



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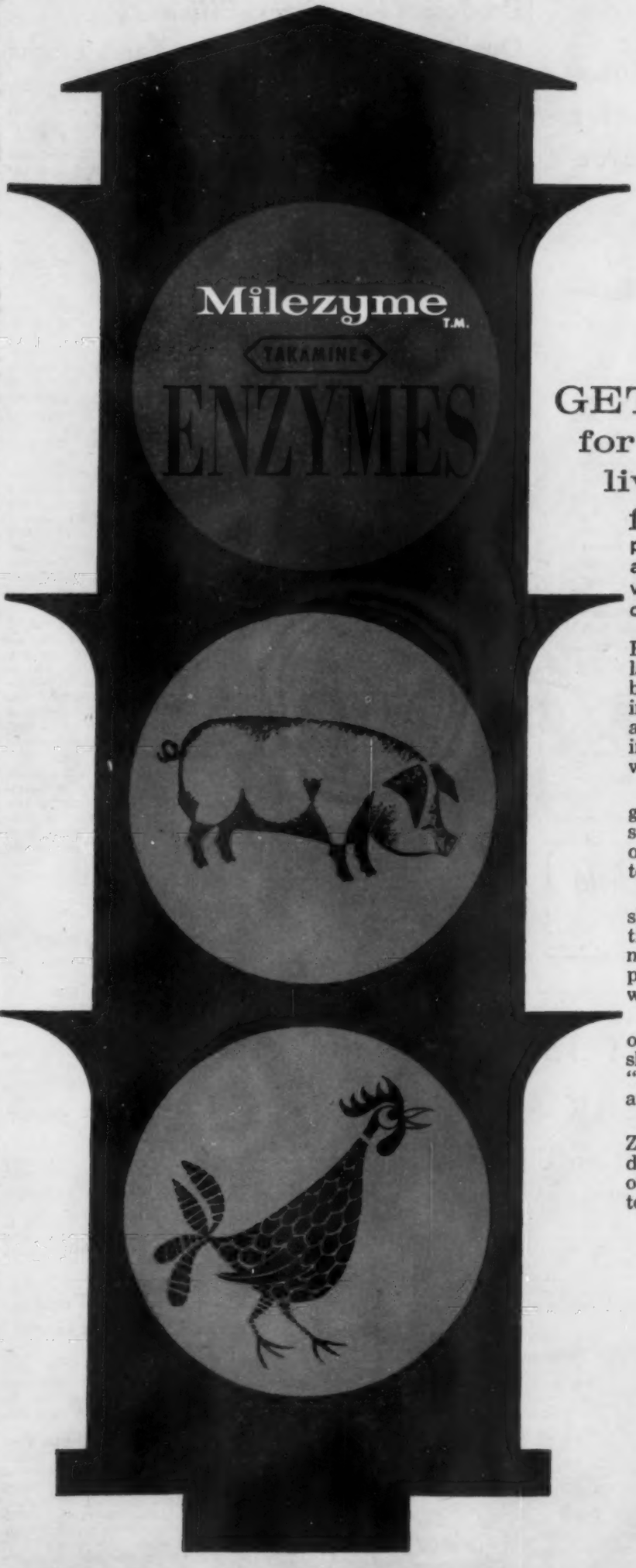

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Producers Must Stress Efficiency, Quality to Preserve Family Farm Flocks

ST. PAUL, MINN. — What's the future of the family-sized laying flocks? No definite answers are known, but a report prepared by Hal Routhe, extension farm management specialist at the University of Minnesota, gives some indications as to what place the small flocks will hold in the future.

Laying Hen Performance

	Average production	Efficient production
Size of flock, hens	300–500	300–500
Rate of lay (average)	216	230
Death loss, %	15	15
Investment per hen	$5.00	$3.50
Feed per dozen eggs, lb. at 2.5c	6.1	5.0

Costs per Dozen Eggs, in Minnesota, 1959

Operating cost	Average production cents	Efficient production cents
Pullets	11.0	10.0
Feed	15.2	12.7
Miscellaneous	1.4	1.3
Total	27.6	24.0
Less cull sales	2.5	2.4
Net operating cost	25.1	21.6
Ownership cost — buildings and equipment, interest, depreciation, and maintenance	3.4	2.3
Total operating and ownership	28.5	23.9
Labor cost One hour per hen at $1/hour	5.5	5.2
Total cost	34.0	29.1

Anticipated Results of Expansion from 300 to 2,000-Hen Laying Flock

	Average production (216 eggs/hen)	Efficient production (230 eggs/hen)
Added investment (buildings, equipment)	$11,200	$11,200
Added yearly return (egg sales, 29c/dozen; cull hens, 45c/hen)	9,640	10,130
Added total expected costs (feed, replacement, repairs, medicine, litter, except labor)	8,070	7,350
Added net return (except depreciation, interest on buildings)	1,570	2,780
Capital repayment (five years with 6% interest)	2,580	2,580
Added for labor and living while capital is repaid	—1,010	200
Added labor required, hours	1,300	1,300

Most of the eggs produced in Minnesota come from flocks with from 300 to 500 hens. In fact, about 70,600 producers—more than 90% of all in the state—have flocks with fewer than 800 hens. Only 780 producers have flocks of 800 to 3,200 hens, and only 45 farmers have flocks larger than this.

In addition, Minnesota's share of the total U.S. egg production has continued to drop. It was 7.2% in 1955, compared to 6% in 1959. Competition for available markets is getting stronger.

"Changing technology and the emphasis on quality eggs no longer justify a laying flock kept for family 'pin money'," said Mr. Routhe. "Low-quality eggs will not have a market in the future."

The accompanying tables point out performance data for average and more efficient production, egg production costs per dozen, and anticipated results of expansion.

"You must have an efficient, low-cost, quality egg operation before a small flock owner in Minnesota can expect a modest return for his labor," Mr. Routhe said. "During the past 5 years, egg prices have averaged 29¢ per dozen on southern Minnesota poultry farms. They can't be expected to average above this level in the next 5 years, either."

For the future, a well-managed family farm flock using existing buildings and family labor and producing quality eggs will continue to have a competitive place in Minnesota's egg industry, reported Mr. Routhe. Labor returns will not be high, and only flock owners with above average past results should consider expansion.

"The challenge, then, is to produce low-cost, quality eggs that will command a place in an efficient marketing system. Failure to meet this challenge will result in the family farm flock passing gradually out of the picture and being replaced by fewer, larger units," concluded Mr. Routhe.

Buffalo Flour Club Elects New Officers

BUFFALO—William P. Thornton, Ralston Purina Co., was elected president of the Buffalo (N.Y.) Flour Club at the annual election meeting at the Buffalo Canoe Club, Bay Beach, Ontario.

Elected to serve with him for the ensuing year were: Roger Greene, American Elevator & Grain Division, vice president, and James E. O'Connell, Standard Milling Co., secretary-treasurer.

The following men were named to two-year terms on the executive board: Joseph A. Cramblit, The Pillsbury Co., and Gordon G. Terwilliger, T. D. F. Co.

Mr. Thornton succeeds William L. Rogers, Standard Milling Co., who now becomes a member of the executive board.

Michigan Dog Food Firm Changes Hands

BATTLE CREEK, MICH.—The office and plant equipment of the Battle Creek Dog Food Co. have been sold to the Dinner Bell Dog Food Co., a subsidiary of Cousins VirDel, Inc., for an undisclosed price.

The sale was reported by the First Finance Co., Chicago, which "bought in" the properties at a recent chattel mortgage sale. The finance company held the mortgage before the sale.

According to an officer of the Chicago firm, the new purchaser will operate here while determining if "it is prudent to continue in Battle Creek." President of the firm was listed as Paul B. Berry.

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Poultry Nutrition Findings Reported At South Dakota

BROOKINGS, S.D.—A number of findings in poultry nutrition research at South Dakota State College have been reported in the experiment station's annual report.

Scientists say that "chick studies have shown new corn, when artificially dried, was equal to naturally dried old corn; that tranquilizers, including reserpine, have only small effects upon chick growth under optimum conditions or with increased growth resulting from higher efficiency diets; that none of the antibiotics, at low levels, including oleandomycin, erythromycin, or atterimin, have given consistent growth responses recently."

The report continued as follows:

"Hen studies indicate that the 'restricted energy' diets are not applicable to rigorous South Dakota conditions; a corn-soybean diet is as good or superior to one also containing animal protein supplements; additions of oleandomycin, mycostatin, oxytetracycline and glucosamine, a lower level of reserpine, arsanilic acid and furazolidone have improved egg production under some conditions, whereas a mixture of penicillin, streptomycin and sulfaquinoxaline was without beneficial effect.

"Antibiotics in the ration can disturb the relation of the microflora in the intestinal tract and increase the incidence of crop moniliasis.

Turkey Nutrition

"Although corn is presently the most economical source of energy for growing turkeys, the combination of fat with oats could at times be more economical. Diets consisting largely of corn compared to those of oats and 5% animal fat supported equally efficient gains of turkeys to market age, though the actual gains in weight on the oats and fat diets were superior. The addition of a mixture of amylolytic enzymes to either of these diets was without effect on growth or feed efficiency. The oats and fat diets produced slightly fatter carcasses in the study.

"Poult studies with the 'isolated soybean protein' type purified diet have shown the unusually high requirement of zinc of over 50 parts per million (ppm.). Supplements of unknown factors are required for maximum growth on this diet. In particular, a water extract of soybean meal elicits a marked response, a portion of which activity is inorganic.

"Hen studies with the blood fibrin type purified diet have shown a requirement for factors contained in the water extract of soybean meal for hatchability of fertile eggs. Egg production is poor on this diet, indicating another unknown deficiency. Studies of this type could lead to the discovery of unknown required nutrients, and thus possibly more adequate fortification of practical diets.

"Addition of 15 gm. of furazolidone per ton of diet had no effect upon egg production or hatchability of apparently fertile eggs. Growth of progeny of one strain of hens receiving furazolidone was slightly superior to that of the controls, whereas there was no difference in progeny growth rates with the other strain. Addition of 45 gm. of arsanilic acid per ton of diet showed no effect upon reproductive performance, indicating that the lower level was not detrimental, as was the 90 gm. level previously used.

Selenium Poisoning

"Dietary levels of selenium of 5 ppm. or more reduced hatchability of chicken eggs, whereas 8 ppm. or more were required for growth reduction in growing chicks. Two parts per million appeared to stimulate growth. Use of inorganic arsenic in the drinking water for laying chickens partially overcame the toxic effects on hatchability. Reduced hatchability showed up where breeder hens received 12-13 ppm. selenium—arsenic did not overcome this toxicity.

"Work with chicks has shown arsenic partially overcomes the effects of 10 ppm. of selenium but not of 15 ppm. Linseed meal has shown some counteractive effect with chicks, whereas vitamin E has largely been ineffective."

Issues Booklet on Range Feeding

LA SALLE, COLO. — The John Ewing Co. recently published a new booklet on "More Profitable Winter Range Feeding."

The author, John Ewing, tells of various programs for livestock and reports in details on various feed products his company offers.

The booklet tells of the value of the use of the antibiotic Aureomycin and dehydrated alfalfa in the feeds.

Various special purpose feeds are mentioned.

Ripco Air Systems Picks Representatives

OXFORD, PA.—Ripco Air Systems has announced the appointment of firms to serve as its representatives in two states.

Blandon Equipment Co., Prinsburg, Minn., will represent Ripco throughout Minnesota, and Allied Industries, Waupaca, Wis., will represent Ripco in Wisconsin.

F. P. Blandon has been supplying the Minnesota feed dealers with mill equipment for more than 20 years and has recently formed his own equipment company to represent feed machinery manufacturers.

Along with the announcement of the addition of the Ripco Air Systems to the Allied Industries line, Ned Murray, president, announced plans for an active campaign to acquaint Wisconsin feed dealers with the advantages of Ripco bulk handling equipment.

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Concluding recent tests of seven different flavors, using 128 two-week-old pigs, Iowa State University scientists revealed that pigs' *preference for flavors change with age,* and the *flavor and odor components of sow milk* incorporated into dry baby pigs' rations along with the proper "sweet tooth" balance *greatly improve palatability.*

PIGNECTAR (sow milk flavor) was developed from this research. It is the low-cost answer of getting more feed into baby pigs early . . . provides the nursing palatability in pre-starter and starter feeds . . . helps hog producers *dry nurse* pigs off the sow.

We know nutritional requirements change with age. Now researchers point out that taste requirements change as well . . . a key to controlled palatability in complete feeding programs. This makes TASTE-STAGE feeding important—the program which *combines palatability factors with your modern life-cycle nutrition.*

As little as 1 pound of Pignectar per ton formulated into pig starter rations is the first step to a sound TASTE-STAGE feeding plan. The next step is to use ½ pound of SUCRO FLAVOR® (swine sweet-feed flavor) per ton in grower formulas and ¼ pound per ton of fattener-finisher feeds.

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We are convinced that swine TASTE-STAGE feeding will be profitable to you. In appreciation of your cooperation in trying our program to convince yourself . . . we want you to have this short-wave transistor radio. Listen to the markets, listen to the news, listen to all corners of the world . . . but above all, listen to what the pigs tell you about palatability when Pignectar and Sucro Flavor are used in your swine feeds.

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Results of Missouri Cattle, Swine, Sheep Tests Reported

COLUMBIA, MO.—Results of recent cattle, sheep and swine feeding studies were reported by University of Missouri scientists at the 22nd annual Spring Livestock Day held on the university campus.

In addition to hearing research reports, visiting livestock producers saw animals currently being used in test work.

Guest speaker for the day was Dr. W. P. Garrigus, head of the University of Kentucky animal husbandry department. Dr. Garrigus discussed what performance testing can mean to the beef cattle industry.

CATTLE RESEARCH—A number of research reports were given on experiments dealing with feeding of cattle.

Yearling Steers Fed at Two Protein Levels—The objective was to determine the effects of different protein levels, with and without a goitrogenic hormone-like compound (Tapazole) on the performance and carcass value of fattening steers, say Dr. G. B. Thompson and J. E. Comfort.

Thirty-one grade yearling Hereford steers were used in this experiment. The steers were grazed during the summer and were brought into dry lot in October, 1958. The steers averaged approximately 750 lb. and carried only a moderate degree of finish. These steers were divided into four lots of cattle nearly equal in weight, condition and general type.

The cattle were fed twice daily. The daily ration was increased gradually until the cattle were on full feed after two weeks.

All steers received 10 mg. of an estrogenic hormone-like substance (hexestrol) per head per day in the feed.

The daily gains, feed required per 100 lb. gain and dressing percentage were similar for all lots. The greatest gains were made during the first 84 days of the 126-day feeding period.

Reducing the digestible protein from 8.5% to 6.5% during the fattening period did not improve feedlot performance or carcass value of yearling cattle above those receiving 7.5% digestible protein throughout the fattening period.

The carcass grades and selling price were highest for cattle receiving Tapazole throughout the feeding period. This difference was not significant.

Feeding 300 mg. of Tapazole the last half of the 126-day fattening period did not significantly improve gains, feed efficiency, selling price or carcass grades.

Protein in the Wintering Ration—A test is underway to determine if too little protein in the wintering ration of feeder calves affects their carcass quality after they have been fattened.

Dr. R. L. Preston, assistant professor of animal husbandry, said that "a previous experiment showed that when yearlings gained too little weight during the wintering period, muscle development was reduced in the carcasses following fattening. Also, too much exterior fat was present while marbling was insufficient for the choice grade."

This earlier experiment did not indicate whether the lowered carcass quality was due to too little protein or too little energy in the wintering ration. Research at other experiment stations indicates that energy restriction will not produce this result.

Forty-eight calves averaging 475 lb. were put on the current Missouri test in December. Part of the cattle are receiving adequate protein according to standard requirements. The others are getting only 75% of the adequate level.

The test cattle are also being fed at two different energy levels. One level is designed for wintering to gain 1 lb. per day. The other level is for fattering based on National Research Council standards.

After 98 days on test, cattle on the wintering ration with 75% of protein requirements gained an average .99 lb. per day. Cattle on a similar ration but receiving adequate protein averaged 1.25 lb. gain per day.

In May, these cattle will be put on a fattening ration and fed alike. They will be slaughtered when they reach 1,000 lb. and carcasses will be examined. "This work should tell us if the level of winter feeding affects carcass quality," Dr. Preston concluded.

Hexestrol Implants in Cattle—A series of three hexestrol implants in cattle, made at the beginning of wintering, grazing and fattening periods, produced only slightly larger total gains than one implant made at the beginning of the fattening period in Missouri tests.

This work was done with weaner calves developed into finished yearlings sold in the fall. In charge of the tests were Mr. Comfort, Dr. A. J. Dyer, and G. M. Boswell, all of the university's animal husbandry department.

Beginning in November, 1958, four lots of steer calves were wintered liberally on a ration of corn silage, soybean meal and a mineral mixture. One lot received a 24-mg. implant of hexestrol, another lot a 12-mg. implant and the other two lots were not implanted.

The 24-mg. implant was most effective for this wintering period, according to the researchers. It increased rate of gain 14% and feed efficiency 7% over controls not implanted.

Following the wintering period, two of the groups were continued in dry lot on a winter ration, one dry-lot group was reimplanted, and one was not. The other two lots were grazed on wheat-lespedeza pasture and were not reimplanted.

The reimplanted steers in dry lot gained 10% faster on 2% less feed than steers not reimplanted. Both dry-lot groups gained faster than their running mates on pasture.

In July, 1959, all lots were started on a dry lot fattening ration. One group that had been in dry lot continuously received its first hexestrol —a 36-mg. implant. The other group which had been in dry lot continu-

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ously received its third implant—24 mg.

One lot that had been on pasture got its second implant — a 36-mg. treatment. The final lot served as a control group, having received no implants.

Steers in dry lot during all three phases and then implanted with 36 mg. of hexestrol at the beginning of the fattening period made the largest and most efficient gains during the finishing period. They gained 8% more weight on 10% less feed than steers implanted three successive periods.

All steers receiving implants gained an average of at least 70 lb. more during the entire test than those not implanted. They also made their gains more efficiently.

Wintering steers liberally on corn silage supplemented with 2 lb. per day of soybean meal produced fleshy feeders, making it possible to fatten and market them by Nov. 1. This method of production can increase Missouri's supply of beef at reasonable cost, according to the researchers.

Liquid Protein Supplementation of Wintering Rations—Because of the increased interest in the use of liquid protein supplements for more automatic type feeding of beef cattle, there is under way an experiment to evaluate Morea when fed according to instructions of the supplier, say Dr. R. L. Preston and Dr. G. B. Thompson.

Six hundred pound calves are receiving corn silage and Morea free choice. They are being compared with similar calves being fed a full feed of corn silage and 2 lb. of soybean oil meal per head per day.

After 42 days, the cattle on soybean meal had gained 1.31 lb. per day while the Morea cattle gained .97 lb. per day. Silage consumption has been the same between the two lots—near 45 lb. per head per day. The Morea cattle have consumed slightly in excess of 2 lb. of Morea per day.

"We think that this experiment has not progressed far enough to draw any conclusions," say the researchers. "It is known that a certain adaptation period is necessary when cattle are placed on urea. Secondly, a wintering ration may not supply sufficient energy for maximum use of urea."

SWINE RESEARCH — Swine research reported on at the university involved tests on protein-energy interrelationships, amino acid supplementation and backfat measurement.

Effect of Level of Feeding During Gestation — "Work on this problem needs to continue before definite conclusions can be made," according to Dr. L. F. Tribble and B. T. Dean, researchers.

They suggested that the protein, mineral and vitamin portion of the ration during gestation should receive the most attention.

"We would suggest feeding 1-1¼ lb. per head per day of a protein supplement containing minerals and vitamins to sows during gestation in dry lot; ¾-1 lb. if on good pasture and only enough grain (corn, oats, etc.) to maintain the desired condition," they added. "And don't get sows too fat during gestation."

Protein - Energy Interrelationships in Swine Rations — Addition of 7% stabilized animal grease to medium and high protein rations resulted in increased daily gain of growing-fattening hogs, according to a test conducted by Dr. Tribble and D. E. Boenker.

However, the researchers note, the increased energy at the low protein level did not result in increased rate of gain.

The increased calorie content of the ration resulted, at all protein levels, in a decrease in the amount of feed required per 100 lb. of gain. There was a 12-15% saving of feed when compared to medium energy rations and a 25% feed saving when compared to low energy rations. This result was obtained at all protein levels.

Protein levels used in this study seemed to have little or no effect on daily rate of gain or feed efficiency.

Addition of 7% fat to the medium and high protein rations had little effect on average backfat thickness. However, pigs fed low protein, high energy rations had the thickest backfat of all lots.

Amino Acid Supplementation of Practical Rations for Swine—"Most practical rations for swine are deficient in lysine, methionine and tryptophan," according to Dr. Tribble, Mr. Boenker and E. E. Bartels.

The objective of their research was to study the effects of adding one or more of these amino acids to rations for growing-fattening hogs.

Pigs fed the 13% protein ration in Trial 1 gained slowly, .99 lb. per head per day, and had a poor feed utilization, 406 lb. of feed per 100 lb. gain. Pigs fed the 16% protein ration gained 29% faster and required 16% less feed than those on the 13% ration. The addition of the three amino acids to the 13% protein ration greatly increased the rate and efficiency of gains of the pigs.

In Trial 3, pigs fed the 16% protein ration made very good gains, 1.77 lb. per head per day, compared to approximately 1.5 lb. for pigs receiving 13% protein supplemented with amino acids.

The performance of the pigs in all lots in Trial 2 was good. This performance is of interest because of the low level of protein in the corn, mineral and vitamin rations. The addition of lysine to the ration improved the rate and efficiency of gains of the pigs while the addition of methionine and tryptophan resulted in little additional improvement. The corn-soybean oil meal ration was superior to any of the amino acid supplemented rations.

Selecting Breeding Stock by Backfat—A test is now underway at the University of Missouri to determine results of selecting swine breeding stock on the basis of one factor only —backfat measurement.

Dr. Tribble, university swine specialist, said backfat measurements have been used much in conjunction with other selection factors, such as rate and efficiency of gain. But this test is designed to find out how much progress can be made by intensive selection for backfat alone. Besides studying the heritability of backfat thickness, the researchers also will study effects of this one factor selection on size, growth rate, efficiency and reproduction.

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is being used for this long-range project, according to Dr. Tribble. Started about a year ago, the test will continue at least another four years. The number of animals in the test will be large as about 30 litters are farrowed twice a year.

Gilts and boars are probed at about 175 lb. Those with the least backfat are kept for replacements.

LAMB RATIONS—A variety of tests, involving pelleted creep rations, palatability, rations for pregnant ewes and response to enzymes, were reported upon.

Pelleted Creep Rations for Lambs—Lambs getting a specially designed pelleted creep ration are eating three times more and gaining 50% faster than similar lambs on a straight shelled corn ration, Dr. C. V. Ross, associate professor of animal husbandry, reported.

Dr. Ross said the pelleted ration was made up of 60% ground shelled corn, 30% soybean meal and 10% wheat bran. The lambs had been on test 25 days at the time these results were obtained.

Lambs on the pelleted mixture gained an average of .73 lb. per day compared to .49 lb. per day for lambs on shelled corn. Average daily feed consumption was .87 lb. for the lambs on the mixture, .28 lb. for the lot on shelled corn.

The lambs averaged 23 lb. a head at start of the test. They are suckling throughout the test and have ready access to a creep ration at all times.

The current test is a result of two years of previous experiments to find a highly palatable ration on which lambs will grow well. The Missouri researchers found they could increase the palatability of a corn-SOM-bran mixture both by pelleting and by boosting the amount of SOM and reducing the amount of bran. Result was the 6-3-1 ratio of corn-SOM-bran being used in the current test.

Purpose of the current test is to compare the cost of gains from the corn-SOM-bran ration with those from a simple shelled corn ration.

Ration Palatability Tests—Lambs preferred a creep ration made up of 60% corn, 30% soybean oil meal and 10% bran over other rations offered in University of Missouri palatability tests.

Lambs ate nearly eight times as much of this mixture (pelleted) than straight ground shelled corn, according to Dr. Ross, associate professor of animal husbandry. And they ate nearly twice as much of this mixture as one made up of 60% corn, 10% soybean oil meal and 30% bran.

Lambs preferred pelleted rations over meal rations, Dr. Ross said. They ate one-fourth more of the most preferred ration when it was pelleted than when it was in meal form.

Lambs ate all of the mixtures, both pelleted and meal, more readily than straight ground corn.

This test involved 40 lambs from 30 purebred Hampshire and Shropshire ewes. The six mixtures of feed compared were offered to the lambs in shallow boxes placed side by side in a feed trough. The boxes were rotated frequently to remove effects of position.

As another part of this test, half of the lambs received 10 mg. of Aureomycin per pound of feed while the other half got 30 mg. per pound of feed. There was little difference in performance of the two groups.

A second trial using 60 lambs supported previous work on acceptability of creep rations for lambs. Consumption of the corn, soybean oil meal, and bran mixture was increased a little by adding 5% molasses as a sweetener.

In this second test, Dr. Ross said half the lambs received Aureomycin, the other half didn't. There was little difference in results of the two treatments, confirming earlier studies which showed little advantage can be expected from using Aureomycin when lambs are thrifty and suckling heavy milking ewes.

Corn Silage for Ewes—Corn silage was satisfactory for pregnant ewes when supplemented with either soybean oil meal or an alfalfa hay-ground corn mixture, a University of Missouri researcher reports.

Both supplements gave about the same results, according to Dr. Ross, associate professor of animal husbandry. All ewes produced strong healthy lambs and suckled well. The test is being repeated this year.

The 51 aged ewes in the completed test had been wintered on pasture until Jan. 10 when they were divided into two lots. Both lots were fed corn silage free choice until they again went on pasture March 28. One lot was fed one-third pound of ground corn and .9 lb. alfalfa hay per head per day as a supplement. The other lot got one-third pound of soybean oil meal daily.

Response of Implanted Lambs to Enzymes Fed in Rations—In this test, lambs were fattened in a 2x2x2x2 factorially designed experiment in which the factors were enzymes vs. no enzymes, stilbestrol vs. hexestrol implants, high energy vs. low energy and 11% protein vs. 14% protein in the rations, according to Dr. Ross and John C. Rea.

All lambs were self-fed complete pelleted rations. Aureomycin was added to all rations at the rate of 10 mg. per pound of feed. Mineral mixture composed of equal parts salt and steamed bone meal was fed ad libitum.

Lambs on high energy rations made significantly faster and more efficient gains with higher carcass yields than similar lambs on a low energy ration.

Lambs fed rations containing 14% protein gained faster (approaching significance) and yielded significantly higher than those fed 11% protein.

Lambs fed high energy rations containing 14% protein made faster

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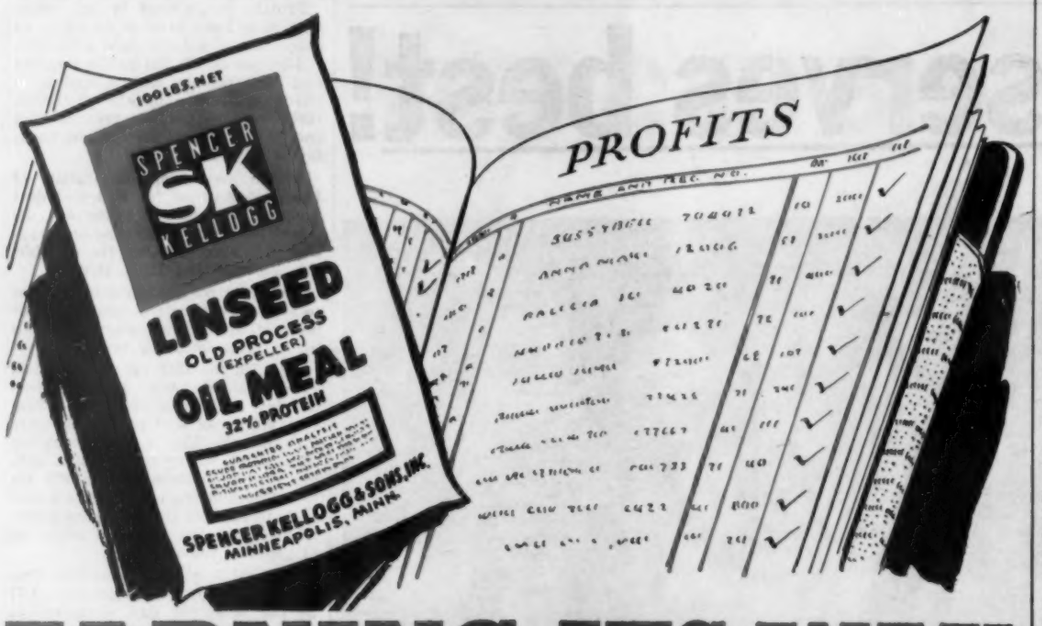

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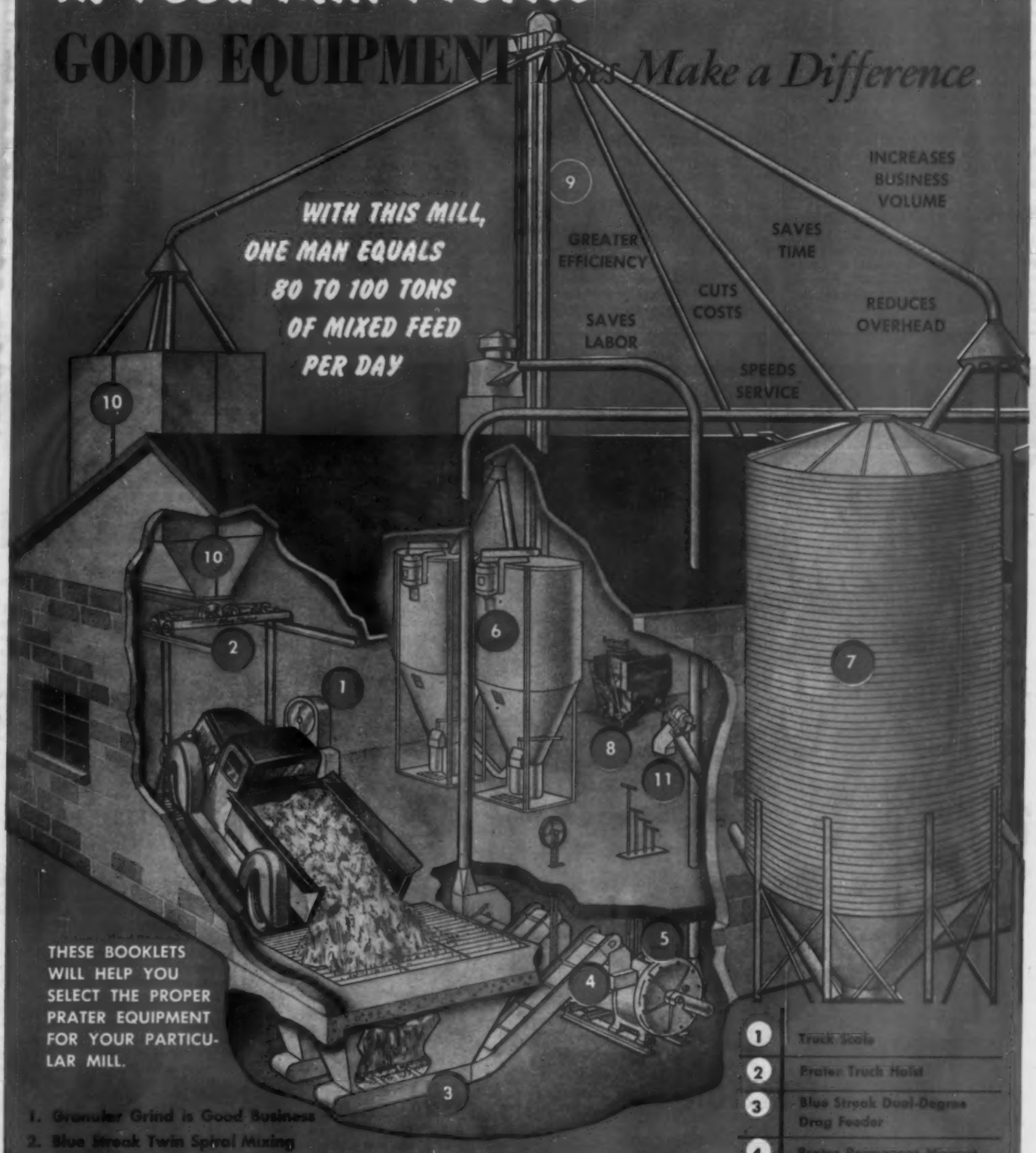

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gains and had higher carcass yields than any other combination of protein and energy levels.

Lambs implanted with hexestrol were somewhat superior to those implanted with stilbestrol in gains, feed efficiency and carcass grades and yields. However, the differences were not significant.

Side effects due to hormone implantation were minimal with no appreciable differences between lambs implanted with hexestrol or stilbestrol.

Under the conditions imposed by this experiment, there was no measurable effect from the use of enzymes.

Sales Up at Abbott Lab

CHICAGO—World sales of Abbott Laboratories for the first quarter rose 9% over the same period of 1959 to a record high $36,283,000, it was announced by President George R. Cain.

Earnings increased 8.9% to $4,511,000, also a first quarter record. Earnings were equivalent, after payment of preferred dividends, to $1.16 a common share. In the first quarter of 1959, sales totaled $33,287,000. Earnings were $4,143,000, equivalent to $1.07 a share.

Gains were realized in both foreign and domestic operations, Mr. Cain said. New products were a factor in the increase.

Dr. Robert Black Dies

UNIVERSITY PARK, N.M. — Dr. Robert H. Black, director of agriculture at New Mexico State University, died of a heart attack at his home in Mesilla Park recently.

Dr. Black, 41, was appointed dean at New Mexico State in 1956. Prior to that, he had served as head of the animal husbandry department at Texas Technical College. He was a native of Oklahoma.

County Support Rates Set by USDA for Oats

WASHINGTON—The U.S. Department of Agriculture has announced 1960-crop oats county support rates.

The rates are based on the 1960 national average support price of 50¢ bu. for Grade No. 3 oats. The method followed in determining rates is the same as in previous years.

Except for 82 counties in Nebraska, the county support rates are the same as for 1959 when the national support price was also 50¢ bu. In Nebraska, 81 county rates are 1¢ higher and one county rate is 2¢ higher. This results from a study of historical price relationships among these counties and adjoining areas which indicated an increase. Terminal rates are not established for oats.

To be eligible for support oats must grade No. 3 or better or No. 4 on the factor of test weight only, USDA said. County support rates have been established for grade No. 3 oats.

Premiums and discounts which are applied for grade and quality to determine individual producer support rates are unchanged from the 1959 program. Premiums are 1¢ bu. for grade No. 2 or better, 1¢ for heavy test weight and 2¢ for extra heavy test weight. Discounts are 1¢ bu. for grade No. 4 on the basis of test weight only and 3¢ bu. for garlicky oats.

Following are ranges of 1960 county support rates for oats in four states which in 1959 produced more than 75 million bushels each:

Oats, Grade No. 3	Range of Rates (per bushel)
Illinois	50@54¢
Wisconsin	48@52¢
Minnesota	39@47¢
Iowa	46@50¢

Elanco Names Market Research Manager

INDIANAPOLIS, IND. — Richard C. Lindstaedt has been named manager of market research for Elanco Products Co., a recently formed division of Eli Lilly & Co.

R. C. Lindstaedt

According to George L. Varnes, president of Elanco, Mr. Lindstaedt will supervise all market research for existing products as well as those under development in agricultural and industrial research programs.

Mr. Lindstaedt joined Lilly in 1946. He was named statistical analyst in the agriculutral and industrial products division in 1955 and promoted to chief of market research for that division in 1958.

Mr. Lindstaedt was awarded a bachelor of science degree in business administration by Butler University in 1949. He also attended Purdue University. He is a member of the Chemical Market Research Assn. and the American Marketing Assn.

Discuss 'Fidy' Plan At Sales Conference

NEW YORK—During the several days when The Amburgo Co., Philadelphia, Pa., was holding sales meetings in New York, the agricultural department of Standard Brands, Inc., joined with Amburgo's men, to discuss what has been accomplished with Fleischmann's "Fidy" irradiated dry yeast, and the future program for it.

In 1938, The Amburgo Co. was the first "Fidy" distributor named by Standard Brands. Since that time, under the guidance of Sam Golden, Amburgo has been a leader in creating an awareness that four-footed animals need vitamin D, officials noted.

At a morning sales session, Ray Green, sales manager of Standard Brands' agricultural department, complimented the Amburgo men for their "Fidy" sales record over the years and told them of future goals.

Dr. G. C. Wallis, director of nutrition of the agricultural department, gave some case histories of the benefits of feeding dairy cows higher levels of vitamin D the year around. Continued interest in "Fidy" for milk fever prevention was highlighted by a discussion of recent inquiries from dairymen.

FEED MILL BURNS

NEW HOLLAND, PA.—Fire swept through the Lancaster County Farm Bureau Cooperative Assn. feed mill at New Holland recently, destroying about 10,000 bu. of grain and causing heavy damage to the upper two floors of the building. Damage was estimated at $80,000—about $50,000 to the building and equipment, and $30,000 to grain and feed.

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Michigan State Sets Marketing Center

EAST LANSING, MICH. — The board of trustees of Michigan State University established an Agricultural Marketing and Utilization Center in the College of Agriculture at its meeting recently.

The purpose is to enable the university to do more effective work in research, extension and teaching in the handling of agricultural products "between the farmer's gate and the consumer's kitchen." Co-ordinated programs of marketing, processing, food technology, packaging and utilization will be carried out, officials reported.

Dr. Robert C. Kramer is director of the new center. He has been professor of agricultural economics and coordinator of extension marketing programs at Michigan State. He joined the staff in 1948, coming from Purdue University. In 1956 he did post-doctoral work in agribusiness at Harvard University and spent six weeks with General Foods Corpuration studying food buying, processing, freezing and distribution. For the past six years, he has been a member of the national extension committee on marketing.

Discussing the new center, Dean Thomas K. Cowden said that Michigan State University has one of the most extensive programs in agricultural marketing and utilization in the U.S.

The dean reported that the center would be financed by the transfer of funds within the College of Agriculture.

POULTRY CANNING PLANT

GENTRY, ARK.—Plus Poultry Co. of Northwest Arkansas, Inc., has started operation of a poultry canning plant here. Bill Simmons, owner, said whole frying chickens will be canned under the "Town & Country" label. They will be shipped mainly to West Europe and to the United Kingdom.

Livestock Areas Change in Nation

WASHINGTON—"Animal agriculture is changing the economic map of the country," said Homer R. Davison, Chicago, president of the American Meat Institute. Mr. Davison was speaking at the 12th annual convention of the Cooperative Food Distributors of America.

Changes noted by Mr. Davison include:

1. California, a relatively young cattle-producing area, is nudging Iowa and Texas, the long-time leaders in this field of endeavor, for the title of largest cattle-slaughtering state in the nation.

2. The South, which in the past has been almost exclusively a cotton-producing area, is rising fast as a livestock and feed grain region.

3. Sheep producing is dwindling in its traditional heartland, the West, and if a future upswing in production occurs, it will probably take place in the Midwest and South.

These are among the most notable manifestations of a shifting emphasis in animal agriculture that has taken place during the last few decades, Mr. Davison said. California's new prominence is due in part to a rather rapid westward move of the center of cattle numbers in the country.

Agriculture, like many other businesses, is in a revolution, Mr. Davison said. The number of farms in the country has dropped from a peak of nearly 6½ million in 1920 to less than 5 million at the last farm census.

Cyanamid Names Head Of Chemical Research

NEW YORK—Dr. Jackson P. English has been appointed director of chemical research for the Agricultural Division of American Cyanamid Co., announced Dr. J. T. Thurston, manager of research and development.

Jackson English

Previously assistant director of the experimental therapeutics research section of the Lederle Division, Dr. English has been with Cyanamid since 1939.

While working toward his Ph.D. in chemistry at Johns Hopkins University, he was a laboratory instructor in quantitative analysis. He is also a graduate of Virginia Military Institute, where he obtained his B.S. degree.

Dr. English is the co-author of 23 scientific papers and holds eleven patents in the field of chemistry.

Committees Appointed

PORTLAND, ORE. — Committee chairmen representing Oregon State College and the Oregon Feed and Seed Dealers Assn., joint sponsors of the annual Oregon Nutrition Conference, have been announced. Conference will be held on Feb. 2 and 3 in 1961.

Representing the school of agriculture will be a committee consisting of Dr. James Oldfield, chairman, Dr. F. G. Hueter and Dr. J. E. Parker. Feed association committee chairman will be Bill Eggiman, Dairy Cooperative Assn., Portland. His committee includes Dr. Don Mishler, Russ Inman, Hal Hardin, Fred West, Frank Delano, Fred Snyder, Bud Cook and Alvin Fredricks.

The two committees will meet in May to begin preliminary discussions on next year's program.

Port Grain Elevator

LONG BEACH, CAL. — Construction of a new grain facility has been started at the Port of Long Beach. The Harbor Commission early in April authorized a construction contract, which was awarded to the Weitz Co., Des Moines, Iowa.

The only port grain elevator facility in southern California has been designed to load ships at a rate of 1,300 tons or 43,000 bu. per hour. Storage space will be large enough to hold 810,000 bu. grain.

Add Schenley's Corn Distillers Dried Grains with Solubles to your Dairy Cow mix

MOTHER KNOWS BEST

She knows that her calf is well taken care of if the SCHENLEY's SOLUDRI is part of the feed-manufacturer's milk replacer.

Dairy cows also like SCHENLEY's CORN DISTILLERS DRIED GRAINS WITH SOLUBLES as a popular protein supplement. It is a favorite ingredient in concentrate mixture for cattle. Both SCHENLEY's SOLUDRI and CORN DISTILLERS DRIED GRAINS WITH SOLUBLES include GFF, the Grain Fermentation Factor. They are always fairly and realistically priced. Write or wire to-day.

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REMEMBER TO ORDER
CHASE BAGS
There's None Better!

Shipments of Cattle Into Corn Belt Down

WASHINGTON—Shipments of stocker and feeder cattle and calves into eight selected North Central states during March were 10% less than the same month a year earlier, the U.S. Department of Agriculture reports. A total of 308,857 head were shipped into these states during March as compared with 342,851 a year earlier.

Of the total cattle and calves received in these states during the month, 136,016 head were moved through public stockyards and 172,841 head were received direct. The combined January through March shipments this year totaled 956,542 head compared with 1,015,842 head for the same period in 1959—a 6% decrease.

Inspected shipments of stocker and feeder cattle from public markets during March this year totaled 353,574 head, 7% below the 379,983 head shipped in March a year earlier.

Shipments of sheep and lambs into the eight North Central states in March totaled 158,890 head compared with 119,850 head during March, 1959—a 33% increase.

Of the total received during March, 44,775 head moved through public markets and 114,115 head moved direct. The direct movement was 72% of the total this March compared with 58% a year earlier. During January through March this year, 479,432 head of stocker and feeder sheep and lambs were shipped into these states, compared with 435,214 head for the same period in 1959.

Shipments of stocker and feeder sheep and lambs inspected at public stockyards totaled 90,112 head compared with 107,653 head in March, 1959, for a 16% decline.

E. F. Cross to Head Colorado Milling

DENVER, COLO. — Robert M. Pease was elected to the newly-created office of chairman of the board at a meeting of the board of directors of the Colorado Milling & Elevator Co. recently. Earl F. Cross was named to succeed Mr. Pease as president and chief executive officer.

E. F. Cross

J. Lawson Cook was elected executive vice president, and George M. Hopfenbeck will continue as senior vice president and treasurer and chief financial officer.

The board announced that Mr. Pease requested that he be relieved of his responsibilities as president due to his speech difficulty resulting from a major throat operation a year ago. Mr. Pease became associated with the Colorado Milling & Elevator Co. in July, 1943, and was elevated from vice president of the firm in April, 1955, to president.

Mr. Cross joined the firm in May, 1956, and was elected vice president at that time. He has been engaged in the grain and milling trade all his business career.

Other officers of the company are Robert M. Pease, Jr., vice president, and Max E. Ehrlich, secretary.

At the present time, the company is the fourth largest milling company in the U.S. Its properties include 17 operating flour mills with an aggregate daily capacity of 57,650 cwt., grain storage elevators with more than 24,600,000 bu. capacity and four formula feed mills. The properties of the company are located in Colorado, Idaho, Illinois, Iowa, Kansas, Missouri, Nebraska, North Carolina, Ohio, Oklahoma, Oregon and Utah.

Buffalo Plant Sold

BUFFALO, N.Y.—A former Spencer Kellogg & Sons plant in Buffalo has been purchased by the Buffalo Extract & Supply Co.

Buffalo Extract will continue to occupy about one-third of the 75,000-sq.-ft. building and establish a public-warehousing operation in the unleased portion of the rest of the structure.

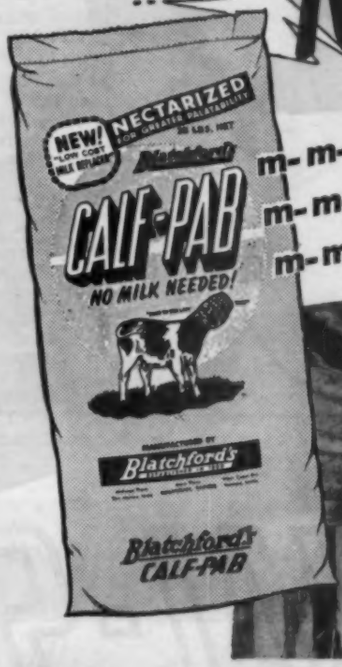
Buffalo Extract & Supply is part of a growing industrial center at this location. It is a subsidiary of Seaway Enterprises Corp., which also operates the Dold Feed Co. and Buffalo Meat Products, Inc., both located in separate buildings on the same site.

ENGINEERED FOR PROFIT!

a modern
FEED MILL
DESIGNED AND BUILT BY
WOODS
WITH THE BULKTRONIC SYSTEM
● CONCRETE ● STEEL ● WOOD
Write—Wire—Phone for Information
WOODS CONSTRUCTION CO.
FORT DODGE, IOWA
DESIGNERS ENGINEERS CONSTRUCTORS

★ Buy and Sell Through WANT ADS ★

m-m-m . . . New Blatchford's
CALF-PAB
Nectarized
with extra whole milk flavor



m-m-m- Greater Palatability
m-m-m- Better Digestability
m-m-m- Easier Change-Over

m-m-m--Smells Better . . . Tastes Better
Wins More Customers . . . More Repeat Sales!

When Dairymen smell new NECTARIZED Blatchford's Calf-Pab's delicious aroma, they want to buy it. When they see how their calves go for its *extra* smackin' good whole milk flavor — they come back for more! They know calves that eat better grow better. And they love the savings they make! Low-cost top quality Calf-Pab is high in milk solids (55%), Vitamins A, B, B12, Antibiotics and other essential nutrients. Put the "buy appeal" of NECTARIZED Calf-Pab to work on your sales floor. Write for Mm-mm NECTARIZED Sales Aids Today!

WRITE TODAY for new NECTARIZED Calf-Pab Samples and free Sales Aids.

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Waukegan, Ill.
YES! Send me the new NECTARIZED Calf-Pab Sales Aids.
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ESTABLISHED IN 1900
Main Plant and Office, WAUKEGAN, ILL.
Midwest Plant, Des Moines, Iowa • West Coast Division, Nampa, Idaho

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Prepared by: Lonsdale Phosphate Co. High Springs, Fla.
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Convention Calendar

New Listings

For the convenience of readers who scan the Convention Calendar regularly for new listings, those added to the column in the current week appear separately from ones which have been entered previously. The following week they will be moved to their proper slot where they will remain until the event is held.

May 18—Oregon Beef Cattle Day; Withycombe Hall, Oregon State College, Corvallis; Dr. J. C. Miller, Head, Dairy and Animal Husbandry Dept., College of Agriculture.

May 24-25 — Egg Marketing and Merchandising Institute; Cornell University, Ithaca, N.Y.; Prof. O. F. Johndrew, Rice Hall.

Sept. 20-21—Iowa Poultry Convention; Veterans Memorial Auditorium, Des Moines; mgr., LeRoy L. Kruskop, 535 East Lincoln Way, Ames.

1961

April 10-12—Poultry and Egg National Board; Sheraton Towers Hotel, Chicago, Ill.; mgr., Lloyd H. Geil, 8 S. Michigan Ave., Chicago 3.

1962

Aug. 13-18—12th World's Poultry Congress; Show Grounds of the New South Wales Royal Agricultural Society, Sydney, Australia; Dr. Cliff D. Carpenter, chairman, U.S. Participation Committee, 1207 Emerald Bay, Laguna Beach, Cal.; Dr. A. William Jasper, secretary, c/o AFBF, 2300 Merchandise Mart, Chicago 54, Ill.

May 9-11 — American Feed Manufacturers Assn.; Conrad Hilton Hotel, Chicago; sec., W. T. Diamond, 53 W. Jackson Blvd., Chicago 4, Ill.

May 9-11 — Association of American Feed Control Officials; Sheraton-Blackstone Hotel, Chicago; sec., Bruce Poundstone, Feed and Fertilizer Dept., Agricultural Experiment Station Bldg., University of Kentucky, Lexington.

May 11 — South Carolina Poultry Festival; Batesburg-Leesville, S.C.; sec., W. E. Sanders, Batesburg.

May 15-16—Missouri Grain & Feed Assn.; Hotel Governor, Jefferson City; sec., D. A. Meinershagen, Higginsville.

May 15-17 — National Cottonseed Products Assn.; Roosevelt Hotel, New Orleans, La.; sec., John F. Moloney, Box 5736, Memphis 4, Tenn.

May 16—Des Moines Feed & Grain Club Field Day; Hyperion Field Club and Veterans Memorial Auditorium; Les Bright, 1850 E. Euclid, Des Moines 13.

May 23-27 — Southeastern Egg Quality and Grading School; University of Georgia, Athens; sponsored by Southeastern Poultry & Egg Assn., sec., Harold E. Ford, 235 East Ponce de Leon Ave., Decatur.

May 24-25 — Egg Marketing and Merchandisers Institute; Cornell University, Ithaca, N.Y.

June 2-3 — Poultry Servicemens Clinic; Purdue University, Lafayette, Ind.; chm., Joe W. Sicer, Extension Poultryman, Poultry Science Department.

June 5-9—Association of Food and Drug Officials; Baker Hotel, Dallas, Texas; sec., J. F. Lakey, Director, Division of Food and Drugs, Texas State Department of Health.

June 6-7 — Central Retail Feed Assn.; Schroeder Hotel, Milwaukee, Wis.; sec., Eldon Roesler, 1712 W. St. Paul Ave., Milwaukee.

June 8-9—Pacific Northwest Grain Dealers Assn.; Davenport Hotel, Spokane, Wash.; sec., Merrill D. Sather, Peyton Bldg., Spokane.

June 9 — Ohio Beef Cattle Day; Ohio Agricultural Experiment Station, Northwestern Substation, Hoytville.

June 12-14—Eastern Federation of Feed Merchants, Inc., Whiteface Inn, Lake Placid, N.Y.; exec. director, Austin W. Carpenter, Sherburne, N.Y.

June 13-15 — American Association of Feed Microscopists; Hilton Hotel, San Antonio, Texas; sec., G. M. Barnhart, Missouri Department of Agriculture, Jefferson City, Mo.

June 14-15 — Alabama Poultry Industry Assn.; Municipal Auditorium (Exhibits) and Thomas Jefferson Hotel, Birmingham, Ala.; sec., W. L. Walsh, Box 567, Montgomery.

June 14-17—NEPPCO Egg Quality School; Rutgers University, New Brunswick, N.J.; Dr. A. Van Wagenen, NEPPCO, 10 Rutgers Place, Trenton 8, N.J.

June 16-18—Canadian Feed Manufacturers Assn.; Jasper Park, Alberta, Canada; chm., R. Hill, P. O. Box 39, Edmonton, Alberta.

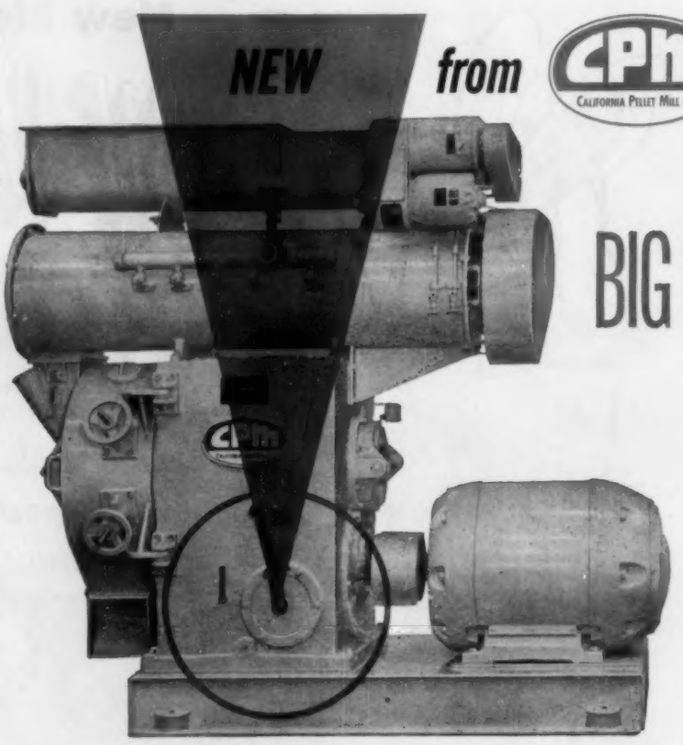
June 17-18 — Delmarva Chicken Festival; Selbyville, Delaware; Delmarva Poultry Industry, Inc., R.F.D. No. 2, Box 47, Georgetown.

June 19-21—Indiana Grain & Feed Dealers Assn.; Mid-Summer Convention; French Lick-Sheraton Hotel, French Lick; sec., Fred K. Sale, 600 Board of Trade Bldg., Indianapolis 4.

June 19-22— The American Dairy Science Assn.; Utah State University, Logan; sec., H. F. Judkins, 32 Ridgeway Circle, White Plains, N.Y.

June 20—All-Industry Poultry Day; Law Building Auditorium, University of Illinois, Urbana; S. F. Ridlen, Poultry Extension Specialist.

June 21-22 — Association of Southern Feed & Fertilizer Control Of-



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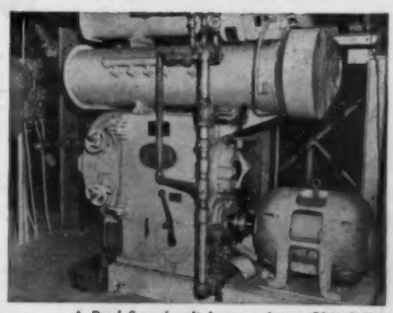
DUAL-SPEED

Great Strength • Great Versatility

For pure ruggedness, plus the obvious advantages of having two-mills-in-one, you just can't beat the new CPM *Dual-Speed* Pellet Mill. Now you shift in seconds to the die speed that meets your particular pelleting need. Choose from these die speed combinations:

LOW RPM	HIGH RPM	LOW RPM	HIGH RPM
132	243	171	400
171	265	265	316
171	316	265	400

Motor: 100 or 125 HP, 1800 RPM



A *Dual-Speed* unit is one of two CPM Pellet Mills at the new Welp's Feed Mill in Bancroft, Iowa. Powered with a 100 HP motor, the mill produces 10 to 14 tons of pellet feed per hour.

Fleischmann's F·I·D·Y
IRRADIATED DRY YEAST
RICH IN VITAMIN D FOR FOUR-FOOTED ANIMALS

ficials; Riverside Hotel, Gatlinburg, Tenn.; sec., Maurice B. Rowe, Department of Agriculture, 1119 State Office Bldg., Richmond 19, Va.

June 23-24—Northeastern Poultry Producers Council Business Management Conference for Egg and Poultry Marketing Cooperatives; Hotel Viking, Newport, Rhode Island; Alfred Van Wagenen, 10 Rutgers Place, Trenton 8, N.J.

June 24—Iowa Cattle Feeders Day; Iowa State University, Ames, Iowa; Dr. Wise Burroughs, Animal Husbandry Dept.

June 24-26—Arkansas Poultry Festival; Little Rock; Arkansas Poultry Federation, P.O. Box 1446, Little Rock; chm., Jerry Hinshaw, Springdale.

July 19-21—American Poultry Congress and Exposition; Ellis Auditorium, Memphis, Tenn.; sponsored by American Poultry & Hatchery Federation; sec., Don M. Turnbull, 521 E. 63rd St., Kansas City 10, Mo.

July 25-26 — Georgia Feed Assn.; General Oglethorpe Hotel, Wilmington Island, Savannah; sec., Will L. Kinard, Suite 210, 3240 Peachtree Road Bldg., Atlanta 5, Ga.

July 29 — Ohio Sheep Day; Ohio Agricultural Experiment Station, Wooster.

Aug. 1-6—Feed Microscopy Short Course; Memorial Student Center, Texas A&M College, College Station; sponsored by Texas Agricultural Experiment Station; chm., Ewing E. Brown, State Chemist's Office, Texas Agricultural Experiment Station.

Aug. 2-5 — Poultry Science Assn.; University of California, Davis; sec., C. B. Ryan, Texas A&M College, College Station.

Aug. 11 — Michigan Swine Day; Michigan State University, East Lansing; Hugh E. Henderson, Extension Specialist, Animal Husbandry.

August 12 — Ohio Dairy Day; Ohio Agricultural Experiment Station, Wooster.

Aug. 14-18—Business Management Program, sponsored by Southeastern Poultry & Egg Assn., University of Georgia, Athens; sec., Harold E. Ford, 235 East Ponce de Leon Ave., Decatur.

CALENDAR FOR 1960-61

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Aug. 18—Michigan Cattle Feeders Day; Michigan State University, East Lansing; Hugh E. Henderson, Extension Specialist, Animal Husbandry.

August 19—Ohio Swine Day; Ohio Agricultural Experiment Station, Wooster.

Aug. 22-23—Kentucky Feed Conference; Campbell House, Lexington; sponsored by the Kentucky Grain & Feed Assn. and University of Kentucky; sec., Jack Weber, P.O. Box 425, Lexington.

Aug. 22 - 23 — American Soybean Assn. and National Soybean Processors Assn., joint conference and meeting; Hotel Peabody, Memphis, Tennessee; George M. Strayer, exec. vice pres., American Soybean Assn., Hudson, Iowa, and R. G. Houghtlin, pres., National Soybean Processors Assn., 3818 Board of Trade Bldg., Chicago 4, Ill.

Aug. 25—Michigan Lamb Feeders Day; Michigan State University, East Lansing; Hugh E. Henderson, Extension Specialist, Animal Husbandry.

Aug. 29-Sept. 1 — Georgia Poultry Institute; Rock Eagle, Georgia; Milton Dendy, Extension Poultryman, College of Agriculture, University of Georgia, Athens.

Sept. 1-6 — International Congress on Nutrition; Sheraton-Park Hotel, Washington, D.C.; sponsored by International Union of Nutritional Sciences; sec., Milton O. Lee, 9650 Wisconsin Ave., Washington 14, D.C.

Sept. 14-15—Maryland Feed Servicemen's Conference; University of Maryland, College Park; chm., Wade H. Rice, Extension Service.

Sept. 14-16—National Feed Ingredients Assn.; Liggetts Holiday Inn, Burlington, Wis.; sec., Paul W. Bonewitz, 1023 Equitable Bldg., Des Moines, Iowa.

Sept. 21-22 — Marketing Seminar for Feed Manufacturers; Morrison Hotel, Chicago; Sales Executives Council, American Feed Manufacturers Assn., W. E. Glennon, president, 53 W. Jackson Blvd., Chicago.

Sept. 21 - 23 — Feed Production School; Continental Hotel, Kansas City; sponsored by Feed Production School, Inc.; pres., Lloyd Larson, 20 W. 9th St. Bldg., Kansas City 5, Mo.

Sept. 22-23 — Arkansas Formula Feed Conference; University of Arkansas, Fayetteville; chm., Dr. E. L. Stephenson, Department of Animal Industry and Veterinary Science.

Sept. 29 — Vermont Feed Dealers and Manufacturers Assn.; University of Vermont, Burlington; sec., D. C. Henderson, Hills Agricultural Science Bldg.

Oct. 2-4 — Poultry Industries of Louisiana, Inc.; Bellemont Motor

The efficiency and versatility of changeable die speeds is *only half* the remarkable *Dual-Speed* story. Conceived and built to master the very toughest of pelleting operations, the CPM *Dual-Speed* features extra heavy construction from the bottom up and inside out. Here, without a doubt, is an exceptional machinery value *on the basis of stamina alone.*

MANY ADVANTAGES OF VARIABLE DIE SPEED

Until now, the only really important variable in pelleting has been in die specification, or operation of more than one machine to meet different production requirements.

Now you can pellet high-speed formulas at peak efficiency; yet quickly gear down for various reasons, such as range-cube production, or where sugar, milk by-products, or molasses ingredients call for *slower* die speeds. (Note: Recent tests clearly show that *hard-to-run* formulas of 5/32", 3/16" and 1/4" pellet size are definitely pelleted at better capacity and quality when die speed is *slower than 200 RPM.*)

The *Dual-Speed* is equipped with a choice of die speeds as low as 132 RPM and as high as 400 RPM with a 100 HP or 125 HP, 1800 RPM motor. On an explosion-proof motor, this means a saving of almost $1,000 over the cost of a 1200 RPM motor. With a CPM *Dual-Speed* you're set in seconds for peak efficiency. No cumbersome sheave changes. Simply move the lever and your die speed is changed.

EXTRA-HEAVY CONSTRUCTION FOR TOUGHER PELLETING JOBS

The CPM *Dual-Speed* can handle the most difficult operating assignments on a continuous, day-in, day-out schedule. It takes on tough, abnormal loads easily — and with an extraordinary factor of safety.

A few of its many features include: Extra large quill bearing and massive quill flange to assure deflection-free die mounting; sturdy new demountable die-driving rim positively mounted by deep rabbet fits; heavier, four-piece, easily removable die clamp; increased bearing area on roller shafts for trouble-free service; outer roller supports bigger, heftier; main shaft and shear pin assembly proportionately larger; increased size of feed chute handles big tonnages—even on light-weight materials; entire drive shaft and intermediate shaft assembly is complete in bench-assembled cartridge of new design; pump type, filter-clean gearbox lubrication protects all gears and bearings, with independent lubrication system for pelleting rolls—all these advantages plus many, many more important and exclusive features.

Get the complete Dual-Speed *story from the man who knows how it can best help you—your CPM representative. Call him today. Remember: More California Pellet Mills are sold today than all other makes combined!*

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1114 E. Wabash Ave., Crawfordsville, Indiana
101 E. 15th Ave., North Kansas City 16, Missouri

Sales & Service Representatives also in: Aberdeen • Albany • Atlanta Calgary • Columbus • Davenport • Denver • Fort Worth • Los Angeles Mexico City • Minneapolis • Montreal • Nashville • Oklahoma City • Omaha Richmond • Seattle • St. Louis • Toronto • Winnipeg
Also manufactured, sold and serviced by Henry Simon Ltd., Stockport, England

Manager Rulon Trost, Jack Thomas Grain and Livestock Co. in Idaho Falls, Idaho puts his CPM *Dual-Speed* into action. This mill operates 10 hours a day, 6 days a week, producing ¾", ⅝" and ½" size pellets.

Charles Hendricks, Manager of Union Seed Co. of Burley, Idaho is shown alongside Union's CPM *Dual-Speed* unit. Mr. Hendricks reports trouble-free, highly efficient performance on a wide range of ingredients.

Piet Bal, Manager of General Mills' Ogden, Utah plant, shifts the die speed on the company's newly installed CPM *Dual-Speed* pellet mill.

Milton R. Cooper, 25-year veteran miller with The Pillsbury Co., Ogden, Utah, checks performance on the plant's CPM *Dual-Speed* unit. Note convenience of gear shift lever.

N. K. Parrish
BROKER JOBBER
• FEEDSTUFFS •
MILO-KAFIR-WHEAT-FIELD SEED
•
LUBBOCK, TEXAS
PORTER 2-5767

Larger Profits for Dealers And Growers With Hard, Sparkling

SUPREME RI-STONE SHARP-INSOLUBLE

GRANITE GRIT

The demand for Sparkling Ri-Stone Granite Grit is growing by leaps and bounds. Poultry Raisers find Ri-Stone's harder, sharper grinding edges enable them to get faster growth and more and larger eggs at lower costs. Every month more raisers are learning about Ri-Stone through its regular advertising in poultry publications reaching approximately a million readers per month.

Yes, Ri-Stone means added profits to both feed dealers and poultry raisers.

Your inquiry is invited. Write for sample kit and a copy of "The Experience Behind Ri-Stone".

Get Ri-Stone in the economical 80 lb bags. A size for all ages. Fine, Medium, Coarse and Turkey sizes.

Fine Aggregate Division

RION CRUSH STONE CORP., Rion, S. C.

QUARRIERS OF GRANITE FOR OVER 70 YEARS.

DIAMOND V BRAND

Fortify your feeds with

YEAST CULTURE

a natural source of

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SAFETY AWARD—The Richmond, Va., branch of the Ralston Purina Co., St. Louis, has been awarded the National Safety Council's "Certificate of Commendation." The Richmond plant qualified for the award because of its injury-free period of 210,097 man-hours from May, 1957, to December, 1959. J. E. Nichols (left), a member of the Industrial Conference of NSC, is shown presenting the award plaque to J. E. Brady (right), plant safety representative for the Richmond mill. Looking on is Donald Danforth, Jr., general manager of the Richmond plant.

Hotel, Baton Rouge; sec., Clyde Ingram, Knapp Hall, Louisiana State University, Baton Rouge.

Oct. 4-6 — Northeastern Poultry Producers Council; Exposition and Convention; Onondaga County War Memorial Bldg., Syracuse, N.Y.; Doris Endebrock, Exposition Mgr., 10 Rutgers Place, Trenton 8, N.J.

Oct. 4-6 — Northeastern Poultry Producers Council Exposition and Convention; War Memorial Auditorium, Syracuse, N.Y.; sec., Richard I. Ammon, 10 Rutgers Place, Trenton 8, N.J.

Oct. 5-7—Texas Nutrition Conference, Texas A&M College Station; chm., Dr. J. R. Couch, Department of Poultry Science.

Oct. 11-12—Virginia State Poultry Federation convention and trade show; Hotel Roanoke, Roanoke, Virginia; sec., J. Paul Williams, 615 East Franklin Street, Richmond 19.

Oct. 12-13 — Association of American Feed Control Officials Annual Meeting; Shoreham Hotel, Washington, D.C.; sec., Bruce Poundstone, Feed and Fertilizer Dept., Agricultural Experiment Station Bldg., University of Kentucky, Lexington.

Oct. 16-18—Kentucky Poultry Federation and Kentucky Poultry Improvement Assn.; Kentucky Hotel, Louisville; John W. Tuttle, field manager.

Oct. 16-20 — Business Management Program; sponsored by the Southeastern Poultry & Egg Assn., University of Georgia, Athens; sec., Harold E. Ford, 235 East Ponce de Leon Ave., Decatur.

Oct. 17-18—California Animal Industry Conference; Fresno Memorial Auditorium, Fresno, Cal.; co-sponsored by California Hay, Grain & Feed Dealers Assn. and University of California; chm., Bert Maxwell, Nulaid Farmers Assn., Petaluma; association office, 1400 Tenth St., Sacramento 14.

Oct. 20-21—Cooperative G.L.F. Exchange, Inc.; stockholders annual meeting; Onondaga War Memorial Bldg., Syracuse, N.Y.

Oct. 27-28—National Swine Indus-

Recirculation Gives You Extra Drying Speed in this Gentle Giant

LENNOX "Super 600"

RECIRCULATING DRYER

★ Moving grain dries uniformly – in less overall time
★ Over-drying is prevented – there's no baking
★ Drying capacity is 600 bushels – with batches as small as 75 bu.
★ Loading, unloading capacity is 1500 bu. per hr.

Smoothly, steadily, the "Super 600" moves your grain through the recirculation cycle. From the 9 ft. drag auger, up the bucket elevator, and into the drying bins, this gentle giant operates automatically to speed the drying process. Wet pockets are broken up by the recirculation process, and the huge air delivery evenly distributes heat through all the grain. The result is uniform grain drying. You keep drying costs at a minimum. The "Super 600" is LP or natural gas fired, and available with PTO or electric drive 3-phase current. All units have complete safety controls. This year, keep ahead with the super fast "Super 600" ...a more profitable and practical grain dryer for elevator and custom work. Detailed literature on request.

LENNOX ENGINEERING MAKES BEST POSSIBLE USE OF HEAT AND AIR

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PERMADRY®*

Permadry, the pioneer of stabilized, dry vitamin A supplements leads the way with all these values that build better feeds!

STABILITY

Maximum stability retained under all conditions of storage and processing.

EFFICIENCY

Tests results at universities, experiment stations and independent laboratories show that Permadry's high biological availability produces consistently superior feed efficiency, growth response and egg production.

MOISTURE RESISTANCE

The fat of the Permadry beadlet is, by nature, a barrier to moisture and resistant to the dissolved minerals.

HIGHEST VITAMIN A RETENTION DURING PELLETING

High temperatures during pelleting operations cannot destroy the Permadry beadlet's protective coating. It therefore also continues to protect the vitamin A after the pelleting operation.

HIGHEST AMOUNT OF A-ACTIVE MATERIAL

The entire beadlet is all vitamin A-active because the fat soluble vitamin A is dissolved throughout the fat, therefore providing the greatest amount of vitamin A-active material in your feeds.

MOST ECONOMICAL

The manufacture of Permadry has through the years been developed to a high state of efficiency and economy. These production savings are passed on to you. Added to this is the fact that the fat of the Permadry beadlet is itself a high energy nutrient.

FOR THE BEST BY TEST IT PAYS TO USE PERMADRY

PERMA-SOL† Water miscible vitamin A in powder form. Designed for those feeds where water dispersion and stability are desired.

PERMA-DUAL†† Whenever vitamin A has to be added to extremely destructive ingredients, use Perma-Dual. The newest development in vitamin A stability (double coated).

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PERMA-SOL MIX – Combination of water dispersible vitamins and antibiotics.

PERMA-D – Sealed-in vitamin D_3 and D_2.

PERMA-E – Sealed-in vitamin E.

ENERG-E – Most economical, stabilized, easily mixable fat with vitamin E. In beadlet form.

PERMA-MIX – Vitamin-antibiotic premixes, standard or custom made formulas ... *and all other vitamins used in formula feeds.*

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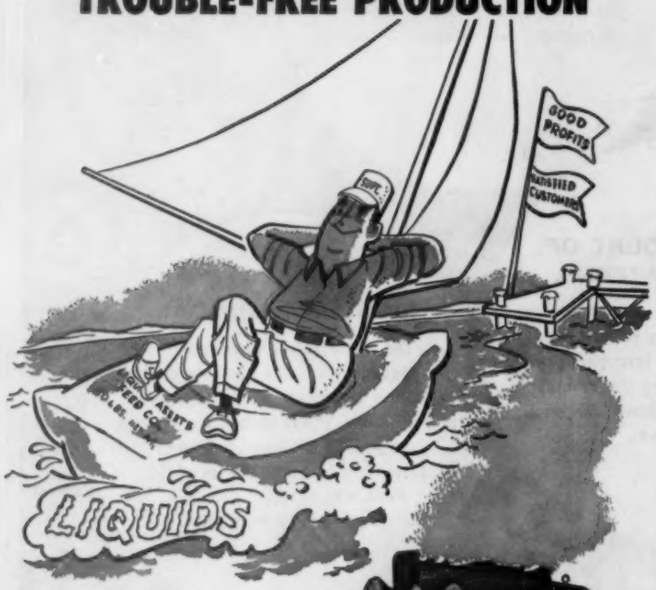
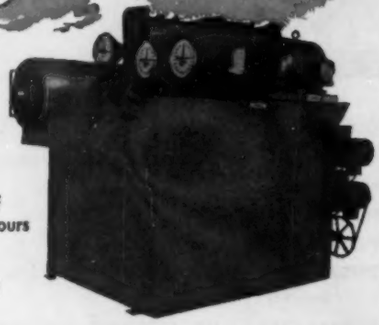


You can eliminate the headaches and problems of mixing liquid feed ingredients when you standardize on Wenger's Liquid Mixing Equipment. Mills everywhere have discovered that problems of liquid balls, excessive man hours per ton, contamination, uneven blends and down time are things of the past with Wenger Engineered Liquid Systems.



Wenger Liquid Blending Systems Will Successfully Handle All These Liquids Singly or Several At a Time

- Animal Fats
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- Moisture

Complete automation of single or multiple liquid applications now available. Write today for full information.

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SABETHA, KANSAS Phone 111

try Conference; University of Kentucky, Lexington.

Oct. 28—Illinois Sheep Day; University of Illinois, Urbana; chm., Dr. U. S. Garrigus, Animal Science Dept.

Nov. 2-3—Kansas Poultry Assn.; Broadview Hotel, Wichita; sec., Harry J. Reed, Box 663, Manhattan.

Nov. 2-3—Illinois Feed Assn.-Illinois Poultry & Hatchery Federation, mory, Springfield; sec., IFA, Dean M. Clark, 141 W. Jackson Blvd., Chicago 4; sec., IPHF, Aubrey Harless, Shelbyville, Ill.

Nov. 3-4 — Cornell Nutrition Conference; Hotel Statler, Buffalo, N.Y.; chm., Dr. H. H. Williams, Biochemistry and Nutrition Dept., Savage Hall, Cornell University, Ithaca, N.Y.

Nov. 9-12 — National Renderers Assn.; Statler-Hilton Hotel, Dallas, Texas; sec., Miss Jamie Fox, 30 N. LaSalle St., Chicago, Ill.

Nov. 14-15 — Washington Animal Industry Conference; Skagit Valley College, Mount Vernon, Wash.; John G. Wilson, mgr., Washington State Feed Assn., 814 Second Ave. Bldg., Seattle 4.

Nov. 16-17—Missouri Poultry Improvement Assn.; Hotel Continental, Kansas City; sec., E. M. Funk, Columbia, Missouri.

Nov. 16-18—Florida Nutrition Conference; University of Florida, Gainesville; chm., Dr. J. P. Feaster, Animal Husbandry and Nutrition Dept.

Nov. 25-26 — American Society of Animal Production; Hotel Sherman, Chicago, Ill.; sec., Clair E. Terrill, Animal Husbandry Research Division, Agricultural Research Center, Beltsville, Md.

1961

Jan. 12-13—Michigan Feed & Grain Dealers Assn.; Michigan State University, Kellogg Center; sec., Nevel Pearson, P.O. Box 472, East Lansing.

Jan. 16-17—Northwest Retail Feed Assn.; Hotel Pick-Nicollet, Minneapolis; sec., W. D. Flemming, 112 Grain Exchange Bldg., Minneapolis, Minn.

Jan. 23-25—Farmers Grain Dealers Assn.; Civic Memorial Auditorium, Fargo, N.D.; sec., Lloyd C. Hanson, 513 Black Bldg., Fargo.

Jan. 31-Feb. 1 — Hoosier Turkey Trot; Purdue Memorial Union, Purdue University, Lafayette, Ind.; John N. Howell, Turkey Department, Indiana State Poultry Assn., Poultry Bldg., Purdue University.

Feb. 2-3—Oregon Animal Nutrition Conference; Withycomb Hall, Oregon State College, Corvallis.

Feb. 7-10—American Dehydrators Assn.; Jung Hotel, New Orleans, La.; executive vice president, Joseph Chrisman, 430 Board of Trade Bldg., Kansas City 5, Mo.

Feb. 8-9—Pacific Northwest Feed Mill Production School; Hotel Leopold, Bellingham, Wash.; sponsored by Washington State Feed Assn.; mgr., John G. Wilson, 814 Second Ave. Bldg., Seattle 4.

Feb. 10 — Washington State Feed Assn., annual convention; Hotel Leopold, Bellingham, Wash.; mgr., John G. Wilson, 814 Second Ave. Bldg., Seattle 4.

Feb. 10-11—Poultry Fact Finding Conference; sponsored by Institute of American Poultry Industries; pres., Harold M. Williams, 59 E. Madison, Chicago 2.

Feb. 19-21 — Ohio Grain & Feed Dealers Assn.; Neil House, Columbus; sec., George G. Greenleaf, 5625 N. High St., P.O. Box 121, Worthington.

GRAIN ELEVATOR PLANNED

GLENDIVE, MONT. — A 100,000 bu. capacity grain elevator will be constructed in the west Glendive area, with construction beginning immediately, according to Art Dietz, secretary-treasurer of the Grain Growers, Inc. Officers besides Mr. Dietz in the new farmer-owned corporation are Kenneth Edwards, president, and Ralph Newson, Bill Wolff, Gordon Kalberg, Lee Gibbs and Howard Bennett, directors.

Continuing research indicates that as the stresses of disease, medication and handling increase, so does the need for vitamin K. When you have a vitamin K need (or problem), ask for . . .

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Booklet on Turkey Feed Formulas Issued by Oklahoma

STILLWATER, OKLA. — Turkey feed formulas which have produced market birds on approximately 2½ lb. of feed per pound of live weight are part of a new booklet on turkey feed formulas recommended by the poultry science department of Oklahoma State University.

Formulas listed in Series 1 are described as "the most up-to-date that can be formulated based upon research findings at Oklahoma State University."

Six series of turkey starter and grower feed formulas are included in the publication, processed series P-345, March, 1960.

The all-mash turkey starter and grower rations listed in Series 1 gave the following results under experimental growing conditions, according to Oklahoma State University researchers:

"Broad breasted bronze or broad white turkey hens weighing approximately 12 lb. were produced in 16 weeks and required approximately 2.4 lb. of feed per pound of live weight. Toms of the same varieties with an average weight of approximately 25 lb. were produced in 22 weeks and required approximately 2.6 lb. of feed per pound of live weight."

Feed cost per pound of market turkey for hens and toms fed these rations was calculated using current feed ingredient prices (February, 1960), according to researchers. In addition to ingredient cost, a mark-up of 50¢ per 100 lb. and a drug cost of 20¢ per bird were included.

"On this basis," say researchers, "using these rations as recommended, feed cost per pound of turkey hen was 13¢, and the feed cost per pound of turkey toms was 12.5¢."

Experimental Conditions

It should be emphasized that these results were obtained under experimental conditions at Oklahoma State University, say the researchers. At the present time, arrangements are being made to conduct field tests in which the all-mash turkey starter and grower rations in Series 1 will be fed. The data obtained in these field tests will be available in the fall of 1960 and will provide a more reliable measure of the performance of turkeys fed these rations under commercial production conditions.

The scientists point out that more efficient formulas than those in Series 1 can be formulated, but the cost of such formulas prohibits their use under commercial feeding conditions. "The formulas in Series 1, however," the researchers say, "have been formulated with the cost factor in mind and are based upon experimental tests in which turkeys were produced at a feed cost in line with current commercial costs."

The turkey starter and grower feed formulas in Series 2, 3, 4, 5 and 6 were set up in order to more nearly meet the needs of feed manufacturers and turkey producers from the standpoint of competitive costs and feeding systems typical of certain turkey producing areas, say the researchers.

The formulas are based on new feeding standards formulated from the extensive research studies which have been in progress at Oklahoma State during the past six years. "Each formula has been balanced for 18 amino acids. Very definite Calorie-protein ratios are recommended in these formulas for specific weeks of the growing period. Research data indicate that deviations from these protein and energy standards have resulted in slower growth and less efficient feed conversion. It is suggested that any changes which feed manufacturers or turkey producers wish to make in these formulas should be made in consultation with nutritionists in the poultry science department at Oklahoma State University."

"It is very important that the feeding schedule given for each series of formulas be followed explicitly," say the researchers. "It is recommended that a feeding system be used in which males and females are grown separately."

The rations and the weeks of the growing period during which they are to be fed are given separately for males and females in the feeding schedule which appears in the booklet. "If males and females cannot be grown separately, the schedule by weeks as given for males should be used," the researchers add.

REBUILDING MILL

SAN ANTONIO, TEXAS—Rebuilding of the Louis Feed Mill, damaged heavily by a fire last July, has begun, according to Louis and Alvin Jupe, owners. Work is expected to be finished soon.

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Man's Internal Struggle
Over The Dollar
COST VERSUS PROFITS

NO-NO-NO-NO! IT COST'S TOO MUCH WE CAN'T AFFORD IT!
BU-U-T-T WE NEED IT BAD TO GET PRODUCTION UP
MANAGER
BOY-O-BOY-O-BOY I JUST KNEW SHE'D DO IT!
I TOLD YOU IT WOULD RUN INTO A LOT OF MONEY

Rising Costs and Shrinking Profits Are Causing Unusual Pressures On Purchasing Decisions.

Letting The Desire To SAVE Money Overpower The Need To MAKE Money...*Can Place You In A Tough Spot.*

If you pay too much, you hate yourself.

If you pay too little, you may be disappointed.

Since equipment must be engineered to do *all* the jobs you want done, and to do them with a minimum of (1) manpower, (2) contamination and (3) maintenance headaches, Wenger builds a lot of components into its Pellet Systems—many more than any other manufacturer.

The "real deal" you are seeking then is for the top flight modern pelleting system which will economically do *all* the jobs you need done—a uniform feeding of dry pellet mash, a top quality application of steam plus one or more liquid feed ingredients, the production of the finest quality pellets, plus the outstanding drying and cooling job which can be done. If you will carefully compare Wenger Pellet *system* costs with all others, including *all* of the necessary functions of a modern pelleting system, (including liquid application) you too will decide that the "real deal" you are looking for is available only from Wenger. Totally aside from minimizing your investment in complete systems cost, you will enjoy the bonus features of top quality materials and workmanship through every component of your pelleting system; the ability to minimize contamination which no other system offers; a great reduction in installation and electrical component costs, plus the multiple purpose design which is yours only with Wenger.

Wenger first determines your total requirements, and then supplies equipment which meets your total needs. Why take less than the opportune advantage of consulting your Wenger Sales and Service Engineer when you are considering liquid feed mixing, pelleting and cooling equipment? He'll supply you with careful recommendations, and the finest equipment available, at a figure which will pleasantly surprise you.

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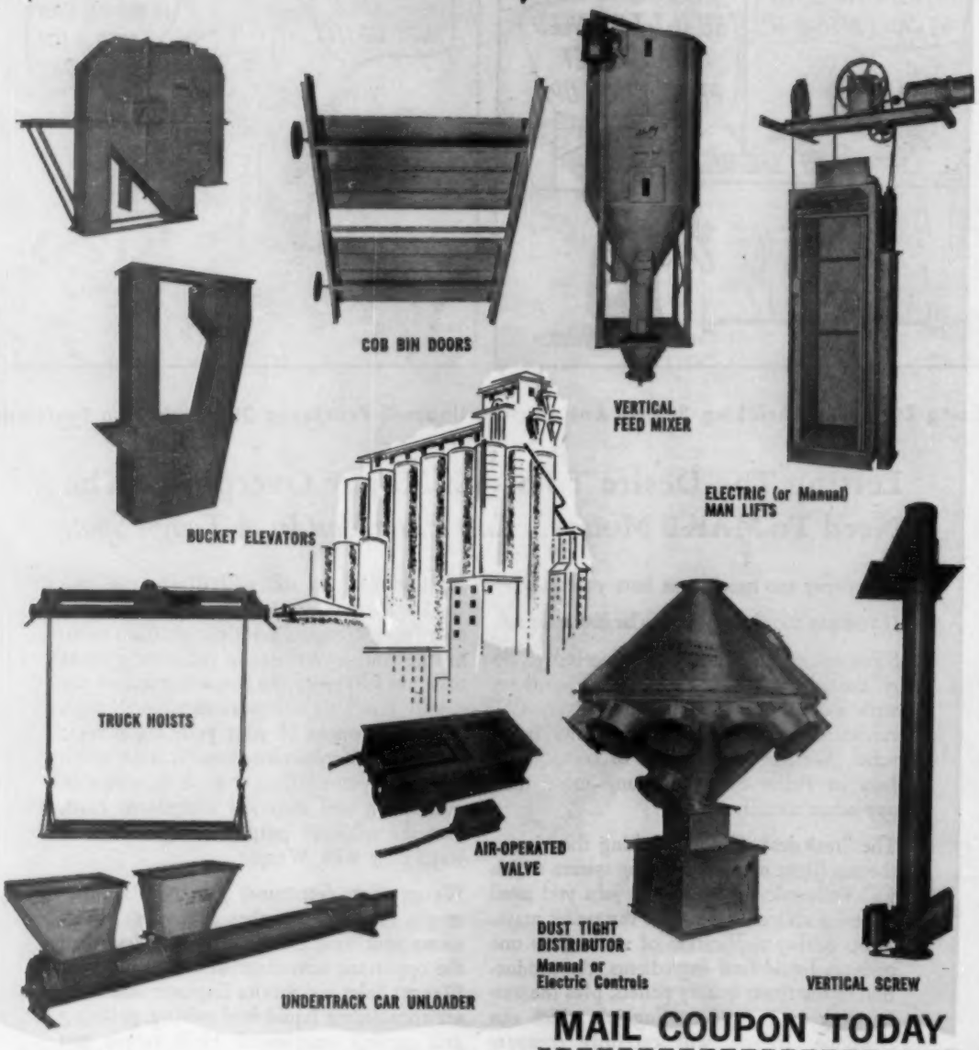
Feed Shipments in Canada Show Decline

OTTAWA — Shipments of primary or concentrated feeds in Canada in February declined to 34,995 tons from 38,569 in the corresponding month last year, and secondary or complete feeds to 188,064 tons from 206,301, while all "other" animal feeds increased to 44,155 tons from 42,370. January-February totals were below year-earlier levels and were: primary feeds, 72,209 tons (79,581 a year ago); secondary feeds, 383,649 tons (423,583), and all "other" animal feeds, 88,381 tons (89,927).

FIRM CHANGES NAME

SCIO, ORE.—Jess Wells, owner of the Wells Produce Co., Scio, has announced that the firm's name has been changed to Wells Feed and Seed. The business handles bulk garden seeds as well as a complete line of feeds and farm supplies.

Shelby WORTH WING INTO!



Just as you know the requirements for your grain or elevator operations, SHELBY can fill them . . . for Shelby Machinery is *engineered* by men who know your needs! Men who know what it takes for a superior, efficient, elevator operation. Men who know only the finest materials, the highest quality workmanship, will stand up under a lifetime of hard use — and whose equipment proves it with a reputation for more efficiency, greater stamina, longer life. Whatever your mill or elevator problem, you'll find Shelby . . . worth checking into!

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Please Send Complete Information and Prices on the Shelby Equipment Indicated:
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Cowhand: Aren't you putting your saddle on backward, sir?

Dude Rancher: That's all you know about it, cowboy—you don't even know which way I'm going.

◆ ◆ ◆

Two New York counterfeiters made a mistake in a batch of new bills and they came out as 18 dollar denominations. After much consideration, they decided to take these bills to the hills of West Virginia for disposition. Arriving at a likely spot, one of the counterfeiters entered a crossroads store and asked the old mountaineer proprietor: "Can you give me change for this $18 bill?"

The old man shifted his chew, and answered, "Yep, I think so. How do you want it, three sixes or two nines?"

◆ ◆ ◆

"Whenever I have a headache, I take aspirin," the patient explained to the doctor. "When I have a cold, I go to bed and drink fruit juices. If I have stomach trouble, I take bicarbonate of soda. Have I been doing the right things?"

"You certainly have," replied the doctor. "That will be $10, please."

◆ ◆ ◆

At a recent convention, a delegate arrived at the hotel to check in. Unfortunately, the clerk informed him, there was no reservation for him and no room.

"Tell me," said the undaunted one, "if the President should arrive today and ask for a room, would you have one for him?"

"Yes, I suppose so," the clerk replied.

"Well," said the delegate, reaching for the register, "the President isn't coming, so I'll take his room."

443 Million Bushels '59 Corn Under Support

WASHINGTON—The U.S. Department of Agriculture this week reported that 443,062,031 bu. of 1959-crop corn had been put under price-support loans and purchase agreements through March.

Quantities of other grains reported under support show little change from February quantities because the final date for putting these under support has passed, USDA said. Producers have until the end of May to put 1959-crop corn under support.

Of the 443.1 million bushels of corn reported put under support through March, 402,586,721 bu. were farm-stored, 31,646,598 warehouse-stored, and 8,828,712 bu. under purchase agreements. Of this total, 64,746,626 bu. were put under support during March. During February, producers put 82,121,997 bu. of 1959-crop under support. During March, 1959, producers put 30,824,669 bu. of 1958-crop corn under support.

The total of 443.1 million bushels of 1959-crop corn reported under support through March is approximately 110 million bushels more than the 332,806,161 bu. of 1958-crop corn put under support through March, 1959.

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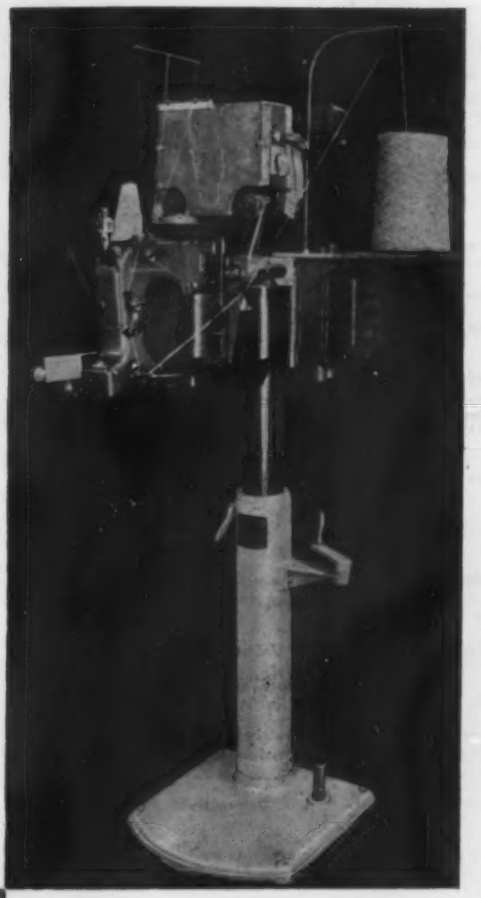
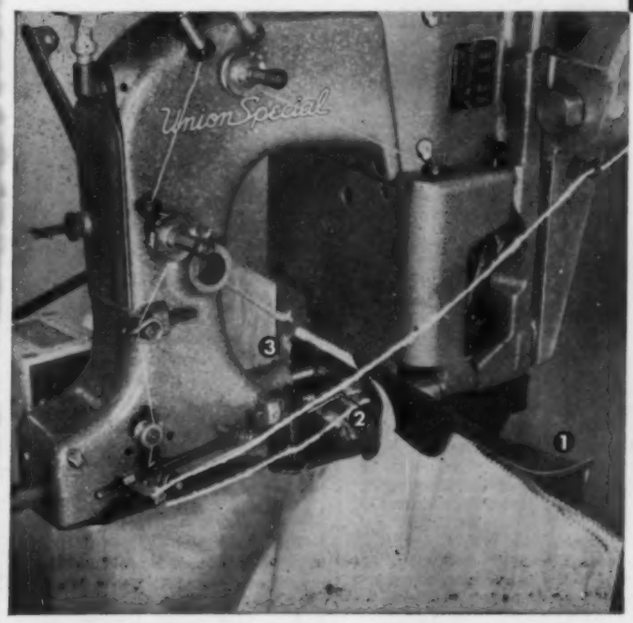
• Our Customers are Our Best Salesmen •

You'll get faster, uniform, trouble-free bag closing with the New Improved Bemis Sewing Machine Pedestal (with Union Special Head)



The New Improved Bemis Sewing Machine Pedestal is a development of Bemis Packaging Service . . . "Customer Center for Sewing Equipment."



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❶ The Bemis E-Xpeditor Guide forms the bag top and guides it into the sewing unit at a predetermined height so the closure is *always* straight and uniform. And it does this *faster* than you would do it otherwise . . . so, *speeds production*. ❷ Bemis' Micro-sensitive Actuator automatically starts the sewing operation when the bag touches the actuator. No misses . . . no false starts . . . no unnecessary stops. In short—"No bag . . . no sew." ❸ The Bemis Automatic *Mechanical* Clipper cuts the thread chain at exactly the right place every time . . . thus, saves thread.

Still Other Important Benefits of the New Improved Bemis Sewing Machine Pedestal

● The sewing head is easily synchronized with the conveyor through a variable speed sheave; proper tension is maintained. ● The sewing head is quickly and easily adjusted to varying bag heights. ● A portable frame is available for positioning the machine in different working areas.

Ask your Bemis Man for the *complete* story; it will pay you.

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The following reprints of articles which have appeared in Feedstuffs may be obtained on order from Feedstuffs' Reader Service Department:

3. **Mobile Feed Milling**—a series of five articles—by Al P. Nelson.. 50c
26. **Feedstuffs' 1960 Analysis Table for Feed Ingredients**—by Charles H. Hubbell 20c
35. **Science and Service**—a 16-page summary of AFMA Golden Year articles covering all phases of feed industry. Quantity discounts. Imprinting distributor's name for nominal additional charge.... 50c
38. **Balancing Swine Rations**—Dr. D. E. Becker, University of Illinois.. 20c
41. **Computer Formulation of Feeds**—Dr. W. H. Hastings, Kansas State University 20c
42. **Nutritional Physiology of the Rumen: A New Approach to Rumen Nutrition**—Dr. J. C. Shaw, Formerly at University of Maryland.. 20c
43. **Problems in Bulk Handling and Suggested Solutions**—J. D. Johnson, General Mills, Inc. 20c
47. **Extending Pellet Mill Die Life**—by R. L. Patterson, Procter & Gamble Co. 35c
48. **Organic Arsenic Compounds as Feed Additives**—by Dr. M. L. Scott, Cornell University 20c
52. **Analysis and Feeding Value Tables for Beef Cattle and Sheep**—6-page article, by Dr. S. H. Morrison, Nutrition Consultant, 25c single copy; 3-5 copies, 15c ea.; 10 or more, 10c each.
53. **Grain Bank Operation**—Dr. W. S. Farris, Purdue University 20c
54. **Cost of Producing Broiler Meat**—Dr. N. V. Halbacka, University of Maryland 20c
56. **Use of Tables, Graphs and Simple Analog Computers in Formulating Least-Cost Feed Mixes**—Dr. R. F. Hutton, Pennsylvania State University 20c
57. **Protein and Energy for Layers**—Dr. M. L. Sunde, University of Wisconsin 20c
58. **Fifty Years of Scientific Development in Swine Nutrition**—Dr. J. H. Conrad, Purdue University 20c
61. **What Protein Level for Chicken Layer Diets**—Dr. J. H. Quisenberry, Texas A&M College 20c
62. **Some Ideas on Feeding Pelleted Rations to Ruminants**—Dr. J. H. Meyer, University of California 20c
63. **Maryland Broiler Trial**—Dr. Gerald F. Combs, University of Maryland 20c
64. **Farmer-Businessman Communication**—Dr. Everett M. Rogers, Ohio State University 20c
65. **Suggestions on Nutrient Requirements of the Pig**—Dr. T. H. Cunha, University of Florida 20c
66. **Pelleted Grain for Dairy Cows**—Dr. T. H. Blosser, Washington State University 20c
67. **A Report on Annual Meeting of Poultry Section**—Dr. J. R. Couch, Texas A&M 20c
68. **Proceedings of 1959 Animal Nutrition Research Council** 25c
69. **Pelleted Rations for Beef Cattle**—Dr. Wise Burroughs, Iowa State University 20c
70. **Tomorrow's Formulas for Swine Feeding**—Dr. Damon Catron, Iowa State University 20c
71. **The Grain Bank Has Come of Age**—Glenn R. Siler, Ralston Purina Co. 25c
72. **Fat Handling in the Feed Mill**—A. J. Kathman, Procter & Gamble Co. 25c
73. **Pelleted Feeds for Beef Cattle**—Fred W. Boren, Kansas State University 25c
74. **The Impact of FDA Regulations on Research and Living Standards**—Dr. Earl L. Butz, Purdue University 20c

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"INSTANT CALF"—First calf sired with frozen-dried semen is shown with her sire and dam at the University of Maryland. From left, are Kenneth Allman, herdsman; Fred Harner (holding calf), semen technician; Ronald England, barnman, and Dr. R. F. Davis, dairy department.

First Calf Is Sired With Reconstituted Frozen-Dried Semen

COLLEGE PARK, MD.—The University of Maryland announced that it has an "instant" calf.

The calf represents a significant break-through in biological science. The animal is a product of artificial insemination and "suspended animation." She is the first calf sired with reconstituted frozen-dried semen, according to Dr. Richard Davis, head of the dairy department at the University.

The sperm cells were placed in a vacuum, and were frozen by rapid evaporation. Moisture removal was continued until the material was dry.

"As techniques are developed to make the storage of dried semen possible, it will mean greater efficiency and economy in dairy cattle improvement," said Dr. Davis. "In this event, the cost of refrigerating frozen semen in storage would be eliminated.

"This is an important research development, but much further research will be needed on frozen-dried semen before this technique can be adapted on a routine basis, for artificial insemination of dairy cattle."

Grain Dealers to Meet In Spokane June 8-9

SPOKANE, WASH. — Plans are in full swing for the staging of the 29th annual convention of the Pacific Northwest Grain Dealers Assn., which will be held at the Davenport Hotel June 8 and 9, announced President H. L. Powell, Lewiston, Idaho.

Mr. Powell reports the convention will be one of the most important in the association's history in view of recent developments in the grain trade. The association, which has more than 230 dealer members in Washington, Oregon, Idaho and Montana, and many more associate members in those states, has as its object the advancement, protection and development of the common interests of those engaged in the warehousing, processing and merchandising of grain and other related activities.

Recently, the trade has been under fire on the political front because of the high cost of storing grain surpluses accumulated as a result of farm support legislation. Some of the business of the convention is expected to be devoted to this problem.

Indianapolis Feed Club Elects Officers

INDIANAPOLIS — Officers were elected at the recent annual meeting of the Indianapolis Grain & Feed Club.

J. G. Steinhart, Jr., Allison, Steinhart & Zook, Inc., was named president; Leonard Meyers, Hygrade Food Products Corp., vice president, and Donald D. Bohnke, Central Soya Co., secretary-treasurer.

Top Dairymen Boost Efficiency, Farm Size

ITHACA, N.Y. — New York's top 10% dairy farmers have increased their yearly milk sales from 150,000 lb. per man in 1950 to 275,000 lb. per man in 1960, according to records kept by Dr. S. W. Warren, department of agricultural economics at Cornell University.

Dr. Warren's records show the state's dairy leaders have made similar gains in other ways. The amount of milk sold per cow has risen from 10,000 to 12,000 lb. Total milk production is up by 14%. Hay yields have increased from 2.8 to 3.5 tons per acre. Oats, wheat and corn show corresponding gains.

Farms also have grown. Herd sizes among the state's top farms now average 57 cows, compared with 45 cows in 1950. The number of dairy farms has dropped by almost a third, however, although the number of working men on each farm has remained about the same.

Dr. Warren attributes the production increases to new mechinery and equipment, high-producing cows, and high crop yields. He says most of the state's dairy farmers have lagged behind because they haven't taken advantage of new information and techniques.

Grain Firm Officers

SPOKANE, WASH. — Officers of Spokane Grain Storage, Inc., newly-formed corporation for the purpose of using a portion of the old naval supply depot, located at Velox, Wash., in the Spokane valley, for grain storage, include Jack Finch, Aslin-Finch Co., president; Tom Curtin, vice president, and W. H. MacDonald, Jr., secretary-treasurer, both of Coast Trading Co., and Fred Aslin, Aslin-Finch Co., a stockholder.

The operation consists of five buildings at the former navy depot which have been selected as the most acceptable for grain storage. The five buildings will handle a total of 7 million bushels with other buildings available to store a total of 30 million bushels, if needed.

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Not Too Late for Chicks

It isn't too late to buy chicks, says a Kansas State University extension poultryman. In fact, he believes there are these advantages in starting chicks late in the spring:

- The cost of brooding and rearing chicks now is somewhat less than with chicks hatched in January and February.
- By starting chicks late in the spring or early summer a poultryman can take advantage of the "stimulight" Mother Nature provides.
- Usually there is less price spread between small, medium and large eggs during the winter and early spring months—when the late-started pullets go into production—than during the late summer and fall.

Gayner McDaniel says that gradual decrease in the total amount of daylight, which starts about June 21, will prolong the age of sexual maturity and this will result in fewer and smaller eggs at the beginning of the laying period. Just about the time the birds begin to lay the days will start getting longer.

"This increase in daylight starting around Dec. 21 will stimulate egg production," Mr. McDaniel notes, "and the chances are that the flock will not need artificial light until the days start getting shorter."

Milo for Hogs

At current prices, grain sorghum fed to hogs will bring about 87¢ more per hundredweight than it's worth when sold to the elevator, according to Prof. M. H. Hazaleus, associate animal husbandman, Colorado State University.

Here's the example he used to explain what he means:

Sold to the elevator at $1.50 cwt., 600 lb. milo is worth $9.

Now start with a 30-35 lb. weaner pig that costs around $10. With good management, a balanced ration which includes that $9 worth of milo will bring the weaner pig up to a market weight of 200 lb. Cost of other feeds in the ration, including supplements, will run around $3.75. Add another $4.25 to cover such items as insurance, labor, interest on investment, death losses and marketing costs.

Total cost to produce and market the 200-lb. hog: $27.

At 17¢ lb., the 200-lb. hog will bring $34, for a profit of $7.

The milo accounts for roughly 75% of the total feed cost. It can be assumed, therefore, that it is also responsible for 75% of the $7 profit, or $5.25.

Add the $5.25 to the $9 the milo was worth to the elevator and the "selling price" on 600 lb. of milo is $14.25. That's $2.37 cwt., rather than $1.50.

Prof. Hazaleus projected the figures in the example to an operation that produces 5,000 bu. (280,000 lb.) of grain sorghum a year. At the elevator price of $1.50 cwt., the milo would be worth $4,200. Put through hogs at $2.37 cwt., the return would be $6,636.

He added that if the producer does his own feeding, the amount allowed for labor stays in his pocket and he can call it part of his salary.

◆

Cold, Hard Cattle Facts

Cold, hard facts are replacing sentiment in the successful cattleman's operation, says Prof. George Litton, head of Virginia Polytechnic Institute's animal husbandry department.

Four major items for the farmer to consider are: Annual cost of keeping a cow, percent calf crop, weight of calf at weaning and the grade of the calf when sold.

Cow cost should be held to $75 a year, says Prof. Litton. Figured in this cost are interest and taxes on land; fertilizing, fencing, clipping and care of pastures; the 2 tons of hay the cow will eat over winter, and replacement plans.

Calving percentage is the number of calves born per 100 cows. If 100 cows each produce a calf, that's a 100% calf crop. But if only 90 calves are born to 100 cows, the percentage drops to 90.

By dividing the calving percentage (say 100%) into the annual cow cost (say $75), it will be seen that $75 is the resulting figure and this is what each calf has cost.

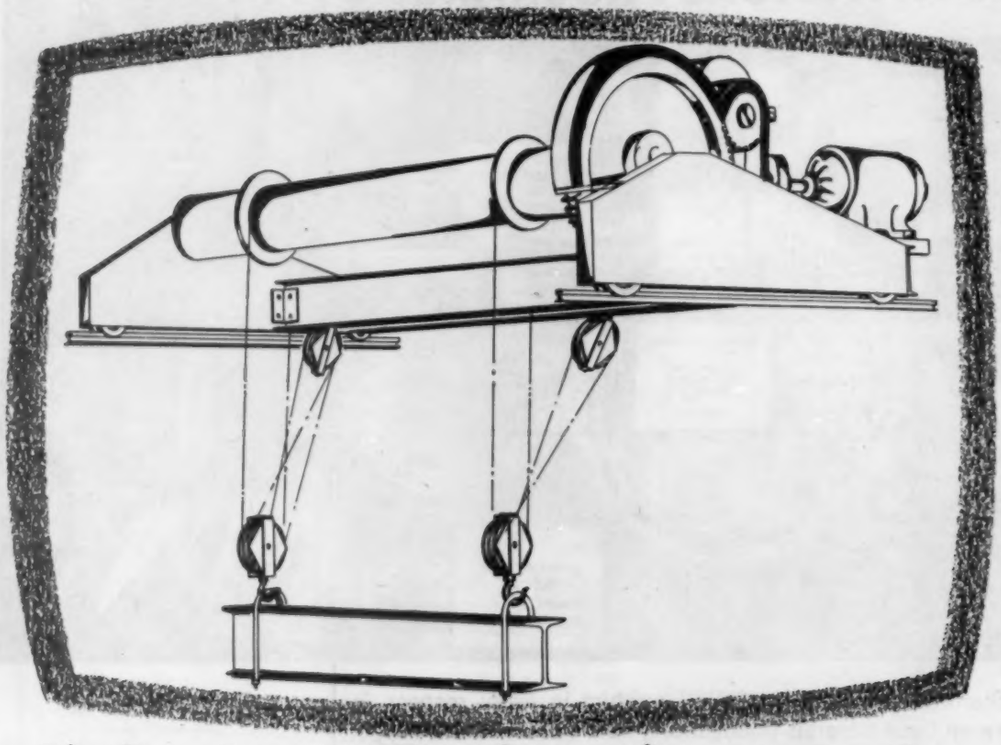
If the percentage is 90 and cow costs $75, the cost for each calf has increased to $83.34. And if the percentage is 80 and cow cost remains $75, the cost rises to $93.75 for each calf. "So, by feeding cows too expensively or having a low calving percentage, a farmer can be hurt financially," Prof. Litton notes.

The third item is weight of the calf at weaning. A calf crop that averages 500 lb. per calf from cows that cost $75 each to keep for a year, with a 100% calving rate, shows a break-even cost of 15¢ lb.

"Prices can get pretty rough for a fellow with low weaning weights, low calving rates and high cow cost," says Prof. Litton. "But the poor farmer who has 400-lb. calf weights with an 80% calf crop runs his break-even cost up to $23.44 cwt. This is a cost increase of $8.44 cwt. So it would seem easy to go broke making 350-400-lb. calves."

Prof. Litton asks if one segment of the cattle industry can long live off the "misery" of another segment. "A farmer who makes yearling replacement cattle must sell them at about 750 lb.," he notes. "This means he must buy a calf weighing 350 lb."

He stressed the importance of grade in calf production: "Over the last 5-6 years, choice calves have averaged $20.29. Their average



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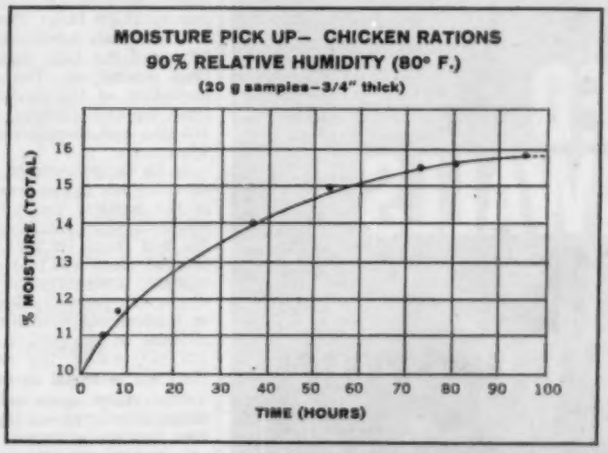

Graph above indicates the rapid moisture build-up within hours of storage. Table below shows how low levels of economical Du Pont "Impedex" double the mold-free life of typical poultry feeds at various moisture levels.

EFFECT OF IMPEDEX® IN POULTRY RATIONS

% moisture	No "Impedex"	0.10% "Impedex"	0.15% "Impedex"	0.20% "Impedex"
Days of mold-free life at 90° F.				
13	7-17	23-30+	30+	30
15	3-9	8-17	15-26	25-30+
17	2-6	5-10	7-12	11-15
Days of mold-free life at 70° F.				
13	14-30+	30+	30+	30+
15	6-18	16-30+	30+	30+
17	4-12	10-20	14-24	22-30

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weight was about 450 lb. which means a total of $91.30 per calf. Good calves brought $18.60 cwt., or $1.69 cwt. less.

"So, for a farmer to have taken home $91.30 from good calves, they would have to have weighed 491 lb. instead of 450. Mediums were worse, as they brought only $16.68 cwt. It would have required a medium calf of 547 lb. to equal the take-home money from a 450-lb. choice calf."

◆

What's Best for Hens?

What's the best housing system for laying hens? University of Minnesota poultry specialists say that, usually, combined use of litter and a dropping pit—covered by slats or wire—is the best bet. But if the flock owner doesn't have time to give his birds the care needed for that system or can't get dry litter, slat floors or cages may be good second choices.

Robert Berg, University of Minnesota extension poultry specialist, says the combination system has some major advantages: With good management, production is higher; fewer birds die and fewer stop laying; birds have a place to dust and rest, and the system takes a minimum of labor.

Main disadvantages: Dry litter is sometimes hard to find, floor eggs get dirty and there may be cannibalism and feather picking.

Here's what Mr. Berg says about other systems:

Cages have these advantages: Less feed needed per hen; no litter to worry about; working conditions are good; birds can't pick each other in individual cages; better control of diseases and parasites, and culling is easy.

On the other hand, cages call for high investments. There's a fly problem; more work is required per hen; eggs are sometimes wire-marked; birds may suffer cage fatigue; they're more seriously affected by sudden temperature changes and need more highly fortified feed, and egg production may be lower.

Slat floors without litter have some advantages, too. They make it easy to control bacterial disease. They require no cleaning during the laying year, except to eliminate moisture. Poor management doesn't affect results as greatly as in other systems.

However, slat floors often bring a moisture problem. The birds are more nervous because they can't find a place to relax. Their feathers may be rougher. They'll break more eggs, do more feather picking and have lower egg production than in a house with litter.

FEED STORE PURCHASED

WESTERN GROVE, ARK.—Hosea Gladden of Western Grove has purchased the Bolin Grocery & Feed Store here from B. B. Bolin and plans to enlarge the firm's retail feed operation. The outlet has a complete line of mixed concentrates and feedstuffs.

RESEARCH

(Continued from page 46)

average digestible protein was with the bud stage (2,601 lb./acre) closely followed by that cut at the one tenth bloom stage (2,563 lb.). With the pre-bud stage the high digestion coefficient for this crop could not overcome the handicap of low production (2,490 lb. digestible protein per acre), and with the one half bloom hay the lower digestibility of the protein further depressed the amount of digestible protein available (2,290 lb.).

In another trial, alfalfa was cut at 21, 28, 35 and 42 day intervals for 24 and 25 weeks after the removal of the first cutting. The largest amount of digestible protein, as determined by wether sheep, was produced by the four-week cutting intervals. The greatest total digestible nutrients were produced by the five-week interval. Plant vigor was reduced the following year by both the three- and four-week cutting intervals.

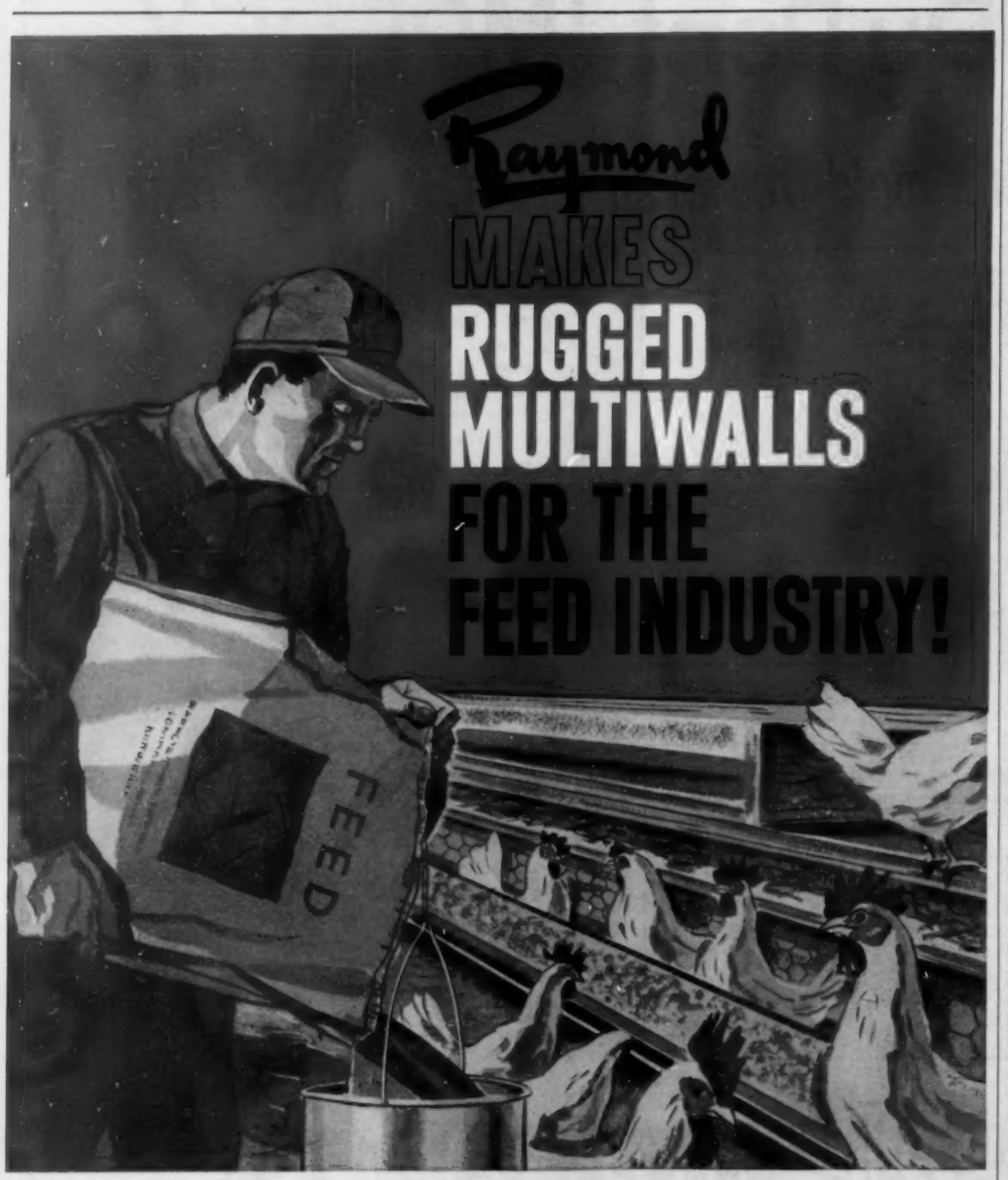
Other Work

In further work, second-cutting alfalfa from a different field was harvested by stage of maturity at pre-bud, 1% bud, 62% bud, 11% bloom, 46% bloom and 96% bloom and digestibility studies were conducted with wether sheep. The pre-bud stage produced high protein (30.9%) and low-fiber hay (15.2%), the protein decreasing and the fiber increasing as plants matured (96% bloom, 16.9% protein, 31.4% fiber). The digestibility of the organic matter decreased rapidly until the 11% bloom stage and then leveled out. The apparent digestibility of the protein decreased from pre-bud (78.8%) to 62% bud (73.4%) and then leveled out somewhat.

As in the previous trial, there was no difference in the true digestibility of the protein. The total digestible nutrients were significantly lower in the bud stage (61.9%) than in the pre-bud stage (66.1%) with no significant differences in the bloom stages, but generally decreasing TDN with advancing maturity with a slight increase at the 96% bloom stage (55.7%) over the 46% bloom (54.7%), as would be expected.

This study again emphasizes the desirability of harvesting forages before they are so mature that the decreasing digestibility with advancing age offsets any increase in dry matter obtained as a result of later harvest. On the other hand, forages cut too early, as in the pre-bud stage, while extremely nutritious and highly digestible, will not continue to yield enough total forage to make the production of such roughage practical.

Because of higher costs incident to more cutting operations per season, commercial hay producers know from experience that harvest at one half bloom or later will give them the biggest total yield. Conversely, such products are not the best nutritionally, and if one evaluates yield against nutrition as indicated by digestibility of protein and TDN we must harvest in the late bud to early bloom stages. It also appears that the common recommendation of harvesting alfalfa at approximately the one tenth bloom stage (one tenth of the stems having one or more flowers in bloom when it is harvested) for on the farm feeding is still a good one.



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USDA Announces Record Supplies Of Wheat and Feed Grains on Hand

WASHINGTON—The U.S. Department of Agriculture reports this week that stocks of wheat and feed grains on April 1 broke previous records for this date. Wheat in all positions is reported at 1,564 million bushels. Farm stocks of wheat are at 1,358 million. Wheat either owned by Commodity Credit Corp. or under government loan accounted for 85% of this quantity.

Rye stocks are reported at 13.8 million in all positions.

April 1 stocks of feed grains totaled 130 million tons, 10% larger than the previous record.

Corn broke the previous April 1 record with a showing of 3,407 million. Farm stocks of corn on April 1 amounted to 2,088 million, of which 26% was held by CCC, approximately the same as last year for the government account.

Corn disappearance for the January-March quarter was estimated at 1,049 million bushels compared with 933 million in the same quarter last year.

Oats stock fell to 488 million in all positions, about one fourth less than 1959. Oats under loan to CCC is only 12% of the total April 1 stock position compared with 17% last year. Oat disappearance in the January-March quarter slumped to 287 million bushels, off about 25% from 1959.

Grain Sorghums

Grain sorghum stocks soared to 746 million, a record high for the date. The big share of sorghums, approximately 637 million bushels, is in off-farm position. The January-March disappearance of this commodity amounted to 128 million bushels, slightly higher than last year.

Soybean stocks as of April 1, 1960, in all positions are reported at 310 million bushel level. Trade sources forecast farm and terminal stocks were higher than a year earlier but were offset by smaller stocks at interior mills, elevators, warehouses, CCC bins and oil processing plants.

The April 1 stock position, according to USDA, reflects a six-month disappearance, October-March 31, of 290 million bushels, from a total starting supply of approximately 600 million bushels. Disappearance consisted of a crush of 204 million; about 6 million bushels of the 1959 crop were crushed prior to Oct. 1, 1959, while 75 million were exported and fed. Residual figure for loss is reported at 2 million bushels. Soybean farm stocks are estimated to be 143 million, compared with 125 million on the same date in 1959.

LeGear Sponsors Display Contest

ST. LOUIS—Dr. LeGear, Inc., St. Louis, is conducting a dealer display contest for one of the firm's products, Poultry Plus. The contest will end June 15; prizes for dealers include $250, $200 and $150 in merchandise.

To qualify, the dealer builds a display of Poultry Plus. Snapshots of the display, taken either by the dealer or a LeGear salesman, are judged for originality, merchandising "sell" and position of the display in the store. Entry blanks are available from Dr. LeGear, Inc., St. Louis, Mo., and all of its sales representatives.

Ripco Export Division

OXFORD, PA.—Ripco Air Systems, manufacturer of bulk feed handling equipment, has set up an export division. Shipments have been made to Switzerland and Hawaii, and orders are in process for shipment to Puerto Rico and Denmark. The company is currently represented in Cuba, Puerto Rico, Mexico and all of South America.

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Feed Store Sales Rise in California

SAN FRANCISCO—Sales by farm stores handling feed materials and other farming equipment and supplies rose to $2,117,130 during the fourth quarter of 1959, representing an increase of more than 4% over the corresponding quarter of the previous year.

The division of research and statistics of the California State Board of Equalization found that farm implement dealers increased their sales an average of 3.3% for the period, to a new high of $1,351,740. Farm and garden supply stores improved their sales at a more rapid rate—an estimated 7.2%, to a high of $765,390 for the quarter.

Sales for the entire calendar year of 1959 were estimated at $191,751,000 for farm implement dealers and $121,195,000 for farm and garden supply stores, representing a total of $312,946,000. In 1958 sales totaled $166,287,000 for farm implement dealers, and $108,937,000 for farm and garden supply stores, with an overall total of $275,224,000, or an increase of almost 15% for the calendar year.

VACCINATIONS DOWN FOR HOG CHOLERA

WASHINGTON—Based on the rate of vaccination for hog cholera last year, the percentage of pigs vaccinated is not adequate to prevent widespread losses in the face of an epidemic, U.S. Department of Agriculture animal disease experts report.

Last year, with 7 million head more pigs farrowed than in 1958, there were 1 million fewer pigs vaccinated than during 1958. This follows a general trend which has prevailed for the past 5 or 6 years.

If the trend toward less vaccination continues, only about one third of the nation's hogs will be protected against hog cholera. This is too low a percentage to stop heavy losses if the disease becomes widespread.

There is no evidence at this time that the incidence of hog cholera is increasing. However, fewer vaccinations could set the stage for costly outbreaks of the disease.

Available vaccines and vaccination procedures are effective, but they should be used before summer, when the incidence of this disease is usually greatest.

Ft. Worth Exchange Reelects Officers

FT. WORTH — The Ft. Worth Grain Exchange held an annual meeting on April 19; all of the present officers and members of the board of directors were reelected.

They are: W. L. Newsom, president; Paul Allison, vice president; Mensing West, J. F. Meyers, Chas. M. Little, Jack N. Greenman and Frank Bailey, Jr., members of the board of directors. J. F. Meyers was re-appointed treasurer, and E. B. Wooten was re-appointed secretary.

Mr. Wooten has been serving in the capacity of secretary almost since the beginning of the exchange. His term of office started in April, 1908.

Venezuela Operation

RICHMOND, VA. — Southern States Cooperative has been providing a Venezuelan poultry operation with feed, according to an article re-recently in the cooperative's Service Guide.

Southern States has been shipping about 80 tons of breeder mash weekly by boat by way of the port of New Orleans to Fomentadora Avicola, S.A., a poultry operation with headquarters at Caracas. It operates a hatchery 40 miles away at LaVictoria and a 20,000 hen breeder-layer flock at Colonial Torva.

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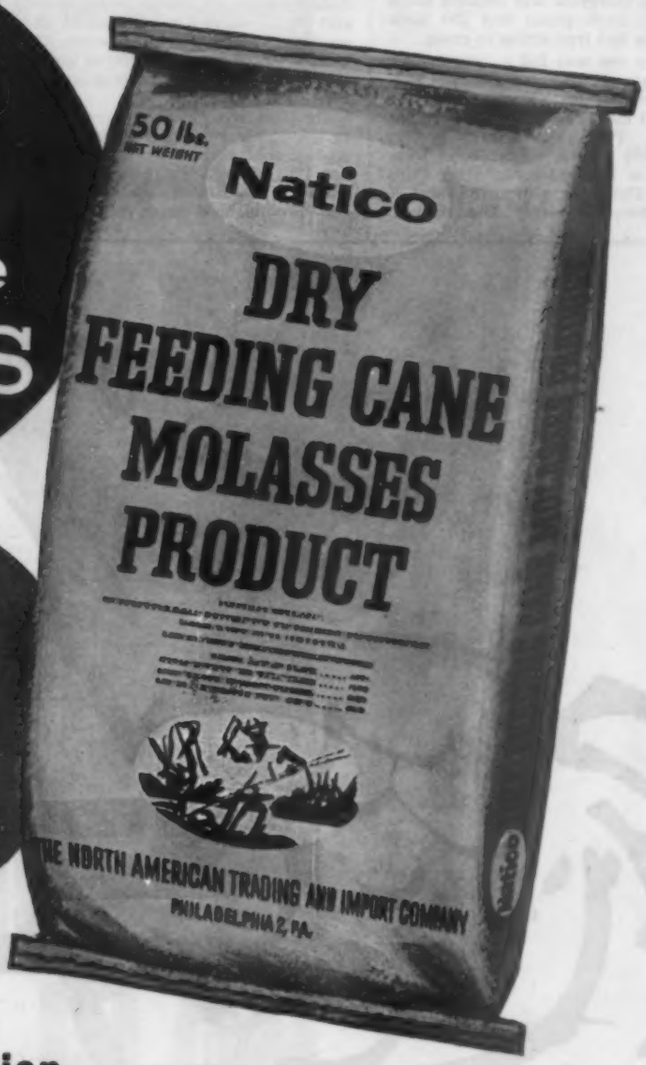

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Now—add the richest dry molasses to your feed! NATICO, the all sugar-cane molasses product. NATICO adds attractive new color and fragrance to feed, even makes dry home-grown grains and roughages tastier to livestock. Try it and watch feeding costs go down while feeding efficiency goes up. Remember—something wonderful happens when you add NATICO!

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Study Pasture as Replacement for Protein Concentrates

UNIVERSITY PARK, PA. — Poultrymen at the Pennsylvania State University poultry research farm have been conducting studies to determine how much protein concentrates in the mash that pasture can replace.

In the test, three groups of 12-week-old White Holland turkeys were on good bluegrass and orchard grass pasture. Each group had 250 birds and they had free access to grain.

Group one was fed a 20% turkey grower mash. In group two, the protein concentrates of meat scrap, soybean oil meal and fish meal were cut in half. This gave a 15% protein mash. No protein concentrates were mixed in the mash for the third group. This gave a mash mixture of 11% protein content. The mineral content in all three rations was held at the same level.

How did the turkeys respond to these mash mixtures of different protein levels? Group one with 20% protein ate the least amount of pasture. They satisfied their nutritional requirements of proteins and vitamins by eating mash. Group two with 15% protein ate more pasture. Group three with 11% protein were grass hungry and consumed much pasture. They had to eat pasture to satisfy their craving for proteins.

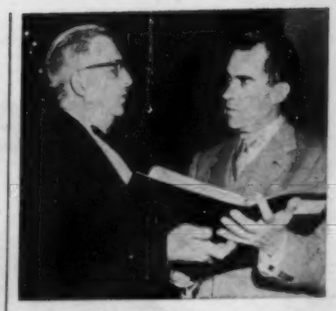
How did the turkeys develop on these rations of different protein levels? The turkeys were dressed at 28 weeks of age and there were no marked differences in weight or quality of carcasses of the turkeys on the three different rations.

These studies indicate, according to the researchers, that pasture can replace the protein concentrates but not the minerals in turkey mashes from 12 weeks to market age. The 15% protein level mash may be the more practical under commercial conditions to take care of drouth periods when pastures may be depleted. Pasture may not reduce feed costs significantly when protein concentrates are relatively low in price.

Swine 'Health' Fund

BERKELEY, CAL. — Response by California's hog producers regarding the establishment of a proposed "swine health fund" that would enable a trained, experienced swine veterinarian to be added to the University of California's staff in the near future has been quite encouraging, reports the California Farm Bureau Federation.

The swine health fund committee of the federation says that voluntary contributions are being accepted now. Art Adrian, Escalon, chairman of the committee, says that once the fund is established, the future cost of the program will be included in the university's budget.



PRESENTS REPORT — Howard L. Roach (left), president of the Soybean Council of America, presents a documented report, covering his recent 70-day, 16,000 mile trip through Europe, the Mid-East, India and Pakistan, to Richard M. Nixon, vice president. "A ready market for $367,220,000 of American soybeans and soybean products overseas is ours for the taking," Mr. Roach said in his message to officials of the Foreign Agricultural Service of the Department of Agriculture and Mr. Nixon. According to figures in the report, the 17 countries he visited overseas offer a market within the next 18 months for 890,000 metric tons of soybean oil, 275,000 tons of soybean oil meal and 2,685,000 tons of soybeans. Immediate signing of the contracts could guarantee the sales.

How Pigs Respond To Temperature

AMES, IOWA—Young weaned pigs can live in a wide range of temperatures and still make good gains and have good feed efficiency according to research conducted at Iowa State University. In this test, no one temperature was found superior within a range of 45 to 90 degrees.

However, reports Duane Mangold, agricultural engineer, pigs 50 lb. and heavier did respond to temperature. When the animals were exposed to a cycling temperature varying 20 degrees daily (85 to 105) and averaging 94 degrees, their rate of gain fell about 15% below that of pigs housed at 60 degrees. In the range of 60 to 78 degrees, there was little difference in pig performance.

As temperatures were lowered from the 60-degree level, average daily gain declined. Although Mr. Mangold noted very little difference in pounds of daily feed intake per pig, he said the loss in daily gain caused a poorer feed efficiency. At 30 degrees, for example, animals performed about 20% less efficiently than those at 60 degrees.

HATCHERY, MILL SOLD

PRAIRIE GROVE, ARK. — Henson's Hatchery & Feed Mill, Inc., Prairie Grove, was sold recently to William Keeton, Fayetteville. The sale price was not disclosed. Carl Henson, the owner, said he plans to vacation in Arizona for a time.

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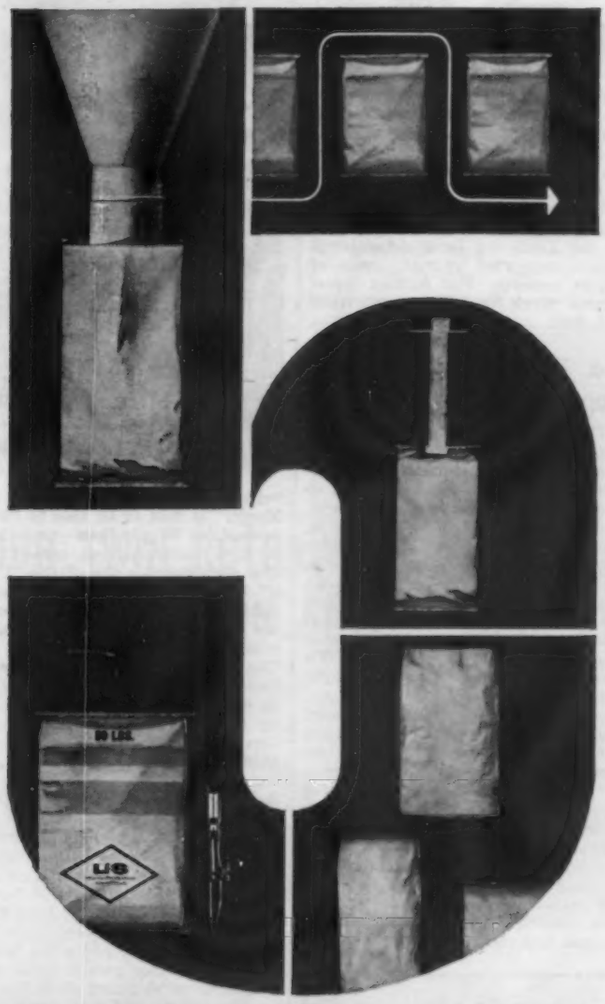

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One is a *plant survey*—a professional analysis of your complete packaging and materials handling operation. Another is *bag construction*—improvements in structural design that can often result in substantially reduced basis weight or less breakage. A third is *bag design*. Last year over 125 firms received greater merchandising impact from their multiwalls through this one service alone!

Fourth is *specifications control*. This covers standardization of multiwall bag styles, elimination of unnecessary odd sizes and the freeing of valuable warehouse space.

And finally, *packaging machinery*. By following recommendations made by UNION-CAMP engineers, dozens of companies have speeded their bagging and handling rates...saved thousands of dollars in lowered labor costs.

The 5-Star Plan is free. And it's available to you regardless of the brand of multiwalls you now use.

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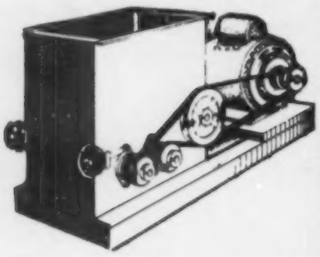
DESCRIPTIONS OF NEW AND IMPROVED PRODUCTS AND SERVICES PROVIDED BY MANUFACTURERS AND SUPPLIERS ARE PRESENTED IN BRIEF FORM. FOR ADDITIONAL INFORMATION, PLEASE USE THE ACCOMPANYING COUPON.

No. 7930—Portable Roller Mill

The Noramgrex Co., Inc., announces a portable roller mill. The unit crimps, cracks, crumbles and



grinds up to 5,000 lb. an hour, the company says. For more information, check No. 7930 on the coupon and mail to this publication.

No. 7927—Feed Supplement

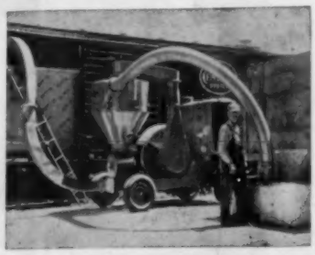
Nopco Chemical Co. has announced a new feed supplement for poultry, swine and livestock feeds. Called Nopgro, the product is a combined fungal and bacterial fermentation supplement produced from Aspergillus oryzae and Bacillus subtilis on a wheat bran base. The company said experiments have shown that the product improves growth and feed efficiency in broilers fed certain rations. Enhanced growth and feed efficiency have been reported in university cattle feeding trials also, and current tests are said to be producing interesting data on stimulation of egg production. It appears, said the company, that the nutritive value of Nopgro is "derived not only from the wide variety of enzymes present in the product, but also from other growth factors in the fermentations." Nopco said that the product, cleared by the Food and Drug Administration, is supported by many years of Nopco research. For further information, check No. 7927 on the coupon and mail.

No. 7931—Enzyme Supplement

The animal feed department of Pabst Brewing Co. has announced the availability of a bound folder containing the results of field trials in which the firm's enzyme supplement, Zymo-Pabst, was fed to beef cattle. The announcement was made in connection with the news that the "triple-enzyme" supplement has been cleared by the Food and Drug Administration for "unrestricted distribution and sale." The company said tests with cattle total up to 2,467,000 head-feeding days. Average results were said to show use of the supplement in fattening rations improved daily gain by 9% and feed efficiency by 6%. The improvements were reported with and without the presence of hormones. From ⅛ to ¾ lb. of Zymo-Pabst was added to each ton of complete cattle feed in these tests. The three enzymes in the new product are for digestion or break-down of protein, starches and plant gums. To obtain a copy of the folder with test results, check No. 7931 on the coupon and mail.

No. 7926—Pneumatic Conveyor

The Myers-Sherman Co. has released information on its new and larger "Grainvayor" pneumatic con-



veyor. The new "Grainvayor Air/Master" is said to be able to convey up to 4,000 bu. per hour—an increase of 82% over previous models. The new unit includes use of the "Ultra-V" belt drive, which makes possible increased speed. The shaft speed of the 140 h.p. gasoline engine was increased from 2,400 rpm to 3,800 rpm. The company said a freight car can be unloaded in 30 minutes. Grain can be lifted to heights of 150 ft. or more or moved across distances greater than 500 ft. The unit is "wholly portable but designed to give the same high-capacity grain handling as permanent pneumatic systems in terminal and export operations." The drive of the "Air/Master" uses 12 matched belts of 3V sections—⅜ in. wide and 5/16 in. deep. Center distance is 38 in. This compact drive will be used on still larger units. The accompanying illustration shows use of the conveyor to track-load grain trucked from an elevator several miles away. For more information, check No. 7926 on the coupon and mail.

No. 7917—Booklet for Dairymen

A booklet which discusses developments in dairying has been released by Technical Industries. The publication discusses a number of the devices engineered by the company, including the Milk-O-Meter, the TeSa Butterfat Test Kit and the Feed-O-Meter. According to company literature, the machines and the test kit were designed to assist the milk producer in running his business efficiently and profitably. For copies, check No. 7917 on the coupon and mail.

No. 7932—Bulk Feed Body

Henderson Manufacturing Co. has announced its economy Model B-60 mechanical self-unloading bulk feed body. A feature of the unit is a mechanical sliding compartment dump floor which enables the operator to "move" the floor over the auger from one compartment to another, thus unloading any compartment desired. The operator can mix the feed from two compartments if desired. A standard 16 ft. auger raises hydraulically and unloads into 23 ft. high bins at a rate in excess of 1,000 lb. per minute through the 6 in. by 9 in. by 6 in. mechanically driven auger discharge system, the company says. Another feature allows the operator to throw the discharge auger "out of

Send me information on the items marked:

- ☐ No. 7917—Booklet for Dairymen
- ☐ No. 7925—Enzyme Product
- ☐ No. 7926—Pneumatic Conveyor
- ☐ No. 7927—Feed Supplement
- ☐ No. 7928—Rotary Blowers
- ☐ No. 7929—Hanging Waterer
- ☐ No. 7930—Portable Roller Mill
- ☐ No. 7931—Enzyme Supplement
- ☐ No. 7932—Bulk Feed Body
- ☐ No. 7933—Magnetic Pulleys
- ☐ No. 7934—Bulk Feed Box

Others (list numbers) .....

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COMPANY .....

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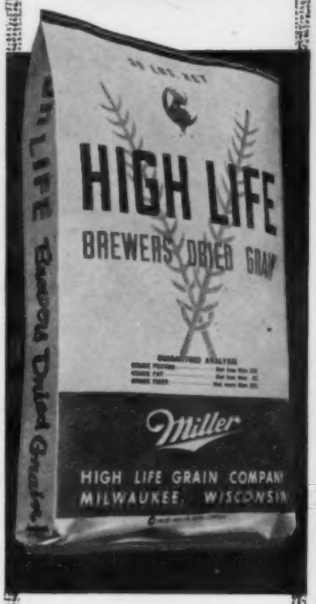

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Packaged in attractive, clean, sturdy, 50-lb. bags with handy tear off tops. Easy to handle and store. Also available in bulk.

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gear" while pit-unloading. An operator's ladder leads to the top sliding loading doors with the over-center positive lock device. For more information, check No. 7932 on the coupon and mail.

No. 7934—Bulk Feed Box

A 2½ ton capacity bulk feed box that slips in and out of a pickup truck has been announced by Sudenga Industries. The pick-up box slides out and waits on roller stands to free the pick-up for other jobs. It is available in a complete steel hoppered unit or as only a hoppered bottom that can

be built up with plywood. The gravity flow auger system does not break pellets or crumblized feeds. The main framework is 4 ft. wide, the box top is 8 ft. by 5 ft. A 12 ft. discharge auger with 5 in. diameter can unload a ton of feed in five to seven minutes. The two compartments are individually operated. Vinyl-nylon tarp makes filling easy, the company says. For details, check No. 7934 on the coupon and mail.

No. 7929—Hanging Waterer

Cumberland Case Co. has introduced an 8 ft. heavy duty hanging waterer. Available in two trough styles—a narrow "V" or a wide "U"

—the unit is similar in design to the company's floor type waterers. The hanging waterers are furnished complete with valve, hose, hose clamps, hose insert, chains and "S" hooks. For additional information, check No. 7929 on the coupon and mail.

Syntha
vitamins
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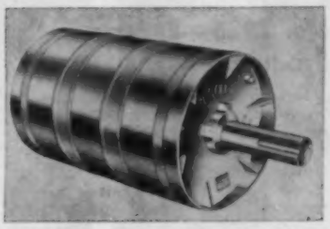
No. 7933—Magnetic Pulleys

Eriez Manufacturing Co. announces a new line of "Erium-powered" permanent magnet pulleys for automatic separation of large or small iron contamination. A descriptive booklet,



containing detailed charts designed to assist in determining what type, strength and dimension of pulley will give optimum performance, is being offered. Two separate models are available, with differences in design resulting in basically different magnetic fields around the pulley. One model is constructed with a radial design to maintain a deep magnetic field suitable to heavy applications involving tramp iron. The other model is for small or medium tramp iron, as well as fine iron contamination in average material flows. For copies of the booklet, check No. 7933 on the coupon and mail.

No. 7928—Rotary Blowers

A series of rotary positive blowers has been developed by Sutorbilt Corp. Called "Series 88," the blowers produce from 200 to 2,200 cfm at pressures up to 12 psi continuously and 15 psi intermittently with only six sizes. The blowers are supplied as standard or gearhead units with a wide selection of ratios up to approximately three to one. Locked bearings on each of the two impeller

shafts enable the new machines to be directly connected to electric motors or V-belt driven. The blowers are

Strong Scott

"OUR TWIN ROTOR MIXER GIVES US TROUBLE-FREE OPERATION AND 40 TONS OF MIX AN HOUR..."

says Harold Thomsen, Manager of Farmers Elevator Company Wisner, Nebraska

Snow, rain or sleet doesn't hinder performance of the Strong-Scott Mixer (see circle) at Farmers Elevator Co.

ELVERN RATHKE, mill operator at Farmers Elevator Co., is happy about the fine results they get with the Strong-Scott #120 Twin Rotor Mixer.

"With the tremendous amount of stock-feeding going on in these parts, we have to do a lot of mixing," states Thomsen. "We mix cracked corn, De Hy, and molasses," adds Thomsen "and our one Strong-Scott mixer gives us all the capacity we need."

Although the mixer is installed outside and high atop the elevator, the cold winter weather proved no obstacle to steady, dependable operation.

Even at the rate of mixing 40 tons per hour, the mixer seldom requires any cleaning. When cleaning is necessary, handy drop doors on the bottom and hinged lids at the top make it a fast, easy job.

Harold Thomsen (above), Manager of Farmers Elevator Co. at Wisner, Nebraska, has a staff of three men in addition to himself.

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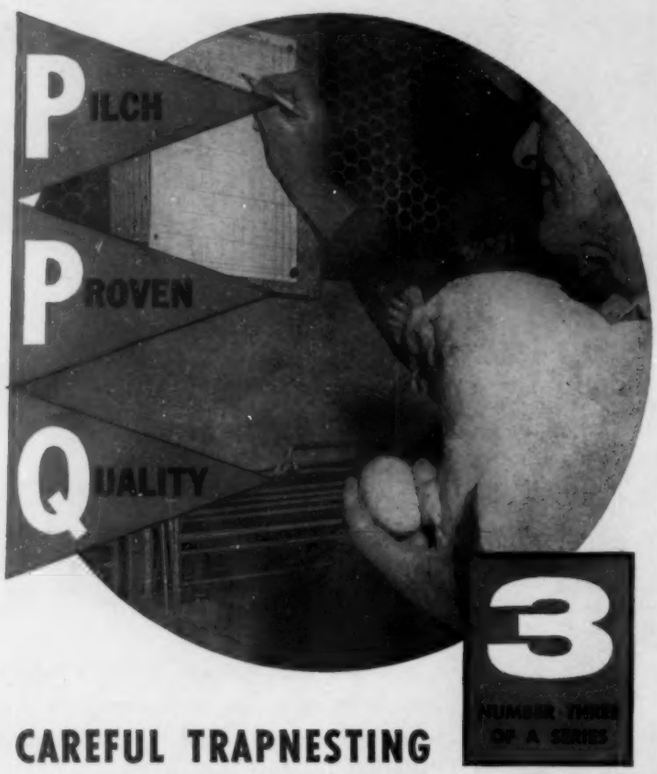

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made of heavy-duty materials such as cast iron, alloy steels, aluminum and ductile irons. The units are applicable to bulk truck operators who use pneumatic unloading equipment utilizing either power take-off driven blowers or direct engine drive. For details, check No. 7928 on the coupon and mail.

No. 7925—Enzyme Product

New information is available on "Agrozyme," the Merck & Co. enzyme supplement now available for use as a growth stimulant in beef cattle fattening rations. Merck said that use of the product will permit a greater nutrition return from corn in high energy fattening rations. Agrozyme is a mixture of enzymes which is dried and diluted with oyster shell to prepare a feed supplement of standardized activity. It is said to be stable under normal storage conditions; relatively non-dusty; does not segregate, and remains free-flowing even at high humidity. It appears to be compatible with vitamin-mineral-antibiotic conditions used in cattle rations. It is used at a level of .0075 lb. per steer per day. Company literature cites Iowa State University and other results in improving gains and feed efficiency in steers. Iowa State results showed a return of $4.28 for each dollar invested in Agrozyme, and more recent Corn Belt tests have shown profits of $10.60 per steer, Merck reported. The product is a combination of enzymes including starch-digesting and protein-digesting enzymes. Research with sheep also is going forward, as is continuing work with northwestern barley for poultry. For additional information, check No. 7925 on the coupon and mail.

Also Available

The following new products have been described in previous issues of Feedstuffs and information about them may still be obtained by jotting the appropriate number of the coupon and forwarding it to Feedstuffs.

No. 7884 — Bulk handling folder, Link-Belt Co.

No. 7885—Auto leasing study, Foundation for Management Research.

No. 7886—Grain dryer, The Mathews Co.

No. 7887 — Feed mixer, Phil-Rite Rollo-Mixers.

No. 7888—Feed body line, New Way Manufacturing Co.

No. 7889—Aluminum feed trucks, Sprout, Waldron & Co.

No. 7890 — Measuring device, Daffin Manufacturing Co.

No. 7891 — Pig injectable iron, Merck & Co., Inc.

No. 7892 — Meat extender, Taste Engineering, Inc.

No. 7893—Hay mill, Wetmore Pulverizer & Machinery Co.

No. 7894—Air driven valve, O. B. Armstrong & Son.

No. 7895 — Egg sanitizer cleaner, Oakes Manufacturing Co.

No. 7896 — Bulk feed units, Curl Engineering & Manufacturing Co.

No. 7897—Laboratory diet, A. E. Staley Manufacturing Co.

No. 7898 — Batching handbook, Howe Scale Co.

No. 7899 — Vitamin E brochure, Hoffmann-LaRoche, Inc.

No. 7900—Feed body catalog, Simonsen Manufacturing Co.

No. 7901—Revised product label, American Scientific Laboratories, Inc.

No. 7902—Grain conveyor, Dunbar-Kapple, Inc.

No. 7903 — Inhalation product, Whitmoyer Laboratories, Inc.

No. 7904—Locking wedge mount, Martin Engineering Co.

No. 7905—Redesigned motors, Lima Electric Motors Co., Inc.

No. 7906—Layer management book, Colonial Poultry Farms, Inc.

No. 7907 — Conveyor book, Link-Belt Co.

No. 7908 — Swine management booklet, Merck & Co., Inc.

No. 7909—Animal health product, Hilltop Laboratories.

No. 7910—Southern farmer promotion, Chas. Pfizer & Co., Inc.

No. 7911—Pallet loading machine, Power-Curve Conveyor Co.

No. 7912—Mastitis x-ray display, Chas. Pfizer & Co., Inc.

No. 7913—Service bulletin charts, Merck & Co.

No. 7914 — Urea feed brochure, Grand River Chemical Division of Deere & Co.

No. 7915—Feed sack sewing, the National Cotton Council.

No. 7916—Coccidiosis booklet, Dr. Salsbury's Laboratories.

No. 7918 — Equipment catalog, Brower Manufacturing Co.

No. 7919—Metal pail for drench, William Cooper & Nephews, Inc.

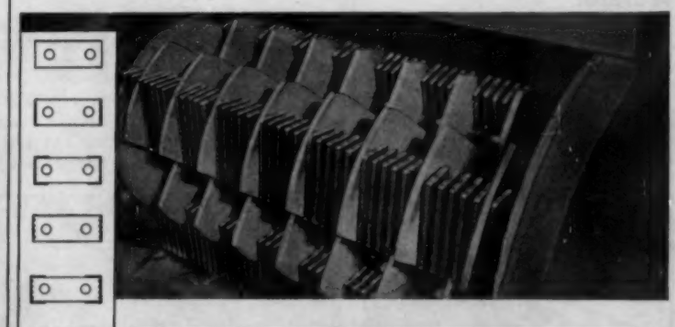
No. 7920—Booklet on dehydrated alfalfa, American Dehydrators Assn.

No. 7921—Crust breaking machine, Seedburo Equipment Co.

No. 7922—Liquid lubricating jelly, Professional Veterinary Drug Co.

No. 7923—Vertical mixer, Sprout, Waldron & Co.

No. 7924—Structural steel material, Keystone Steel & Wire Co.



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For an investment of around $700 in motors and materials, Art Linder and his son, Paul, of Hartley, Iowa, press buttons and feed 250 to 300 cattle in 10 to 15 minutes. With Stilbosol in the ration, the Linder cattle average 2½ to 3 lbs. daily gain.

Norman Erickson, Stratford, Iowa, uses electricity, motors, augers, switch panels, roughage and Stilbosol to keep his feeding costs at 18¢ per pound. "It would take us four times as long to feed without our mechanical equipment," Norman declared. "Stilbosol gives us ⅓ lb. more daily gain."

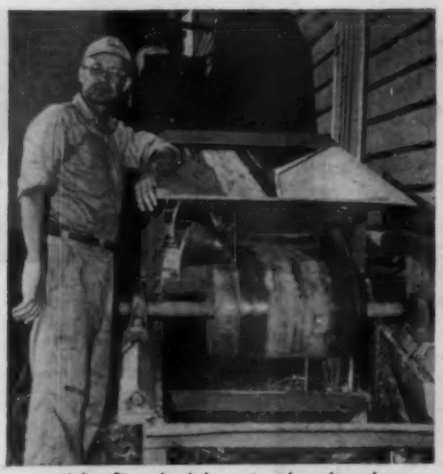
Roger L. Willrett's mechanical feed-handling system (Malta, Ill.) allows him to deliver his grain-roughage ration to 250 head in 10 minutes. "It would take 1½ hours by hand, 45 minutes by feed wagon," Roger explains.

Here's how 6 cattle feeders cut costs

These outstanding feeders use new ideas in laborsaving equipment plus high-efficiency Stilbosol rations.

by Eugene S. Hahnel

Verle Hunt of Ackley, Iowa, with this unique auger tube can now feed his cattle 6 times faster than before. Verle considers his $700 investment a bargain. Stilbosol, too. "We get an extra ½ lb. gain a day," he says, "and, it fits in well with our laborsaving program."



A few flipped switches put grain and roughage on a series of moving belts, which then deliver the final ration to 300 head on the Harold Alfredson farm near Big Rock, Illinois. Mechanization cuts an hour or more hand operation to 15-20 minutes.

A circular feed bunk, serviced by a traveling auger mounted in a 9' U-shaped trough, allows Ted Hebert of Pana, Ill., to push-button feed 100 cattle in 5 minutes. "I think a fellow would be foolish to try and make money feeding cattle without Stilbosol," this efficiency-minded feeder volunteered.

Stilbosol®

(diethylstilbestrol premix, Lilly)

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JOE BROOKS

BY AL P. NELSON

Know Your Customers

The spring night was cool, with a soft wind blowing. When Joe and his employees left the Hotel Manitou for the feed mill to hold a sales training meeting, not one man wore a coat. The employees, as usual, had been treated to a steak dinner at the hotel by Joe on the night of the sales training meeting.

From a swampy area near the railroad tracks rose the chorus of frogs, a lonely sound. Far in the distance could be heard the resounding whistle of an approaching night freight.

"Golly," said Milt Peters, "what a romantic night for a date. And here we have to hold a sales meeting."

Pop Henley snorted. "Dates!" he snorted. "You are always talking about dates. When will you grow up?"

Milt laughed. "I hope I never grow up that much, Pop."

The men, headed by Joe, reached the mill by this time, and so Pop held his tongue; otherwise Milt and he probably would have had another argument about the same subject—women and the way Milt always mentioned his redhead favorites.

Joe flicked on the fluorescents in the big salesroom. About 15 chairs had been set up in the center. Flanking this area were many displays of feeds, bagged fertilizer, salt blocks, twines, garden tractors, a couple of display islands with poultry and livestock remedies, etc. From one section of the big room came the "cheep, cheep" of chicks in cartons awaiting delivery.

"I hope none of you fellows have writer's cramp," Joe smiled as he brought out a number of pads of writing paper and some ball point pens. The latter were part of the stock which Joe had bought in gross lots to give to customers.

"Huh, what's this for?" Milt asked as Joe passed out the pads and pens. "Want me to write a letter to my best girl?"

"Not quite," Joe said agreeably. "I want each of you to write about our customers."

"Customers!" echoed Butterball. "What about them?"

Test Employees

Joe smiled. "Well, this is just one of those tests, boys. All of you have heard about psychology, haven't you? Well, a test like this was worked out by one of those fellows. He said every businessman should try something like this on his employees to see how much they know about his business."

"Joe," suggested Milt soberly. "I think you are working too hard. Maybe you oughta get more rest. Maybe you ought to postpone this meeting and go home and get a good night's sleep."

Joe chuckled. "Think I'll fall for a dodge like that? Boys, I want you to write the names and addresses of as many customers as you know. If the man has a wife, put down her name. If he has children, give the number. Also name the types of feed the customer buys from us, and circle the type he buys most frequently and in the greatest amount."

The employees looked at one another, and then down at their pads of paper.

"Joe," asked Butterball, "can't we take this sheet home and bring it filled out in a day or so?"

The feed dealer shook his head. "No, this has got to be done here, fellows, otherwise it's not a good test. I'm no piker. I'm willing to pay for this. I will pay $10 to the man who names the most customers. I will also give a $5 prize to the man who gives the most complete information about a number of farmers, even if he hasn't got the longest list."

"In other words," put in Pop, "this is a test to see if we are really paying attention to the customers who

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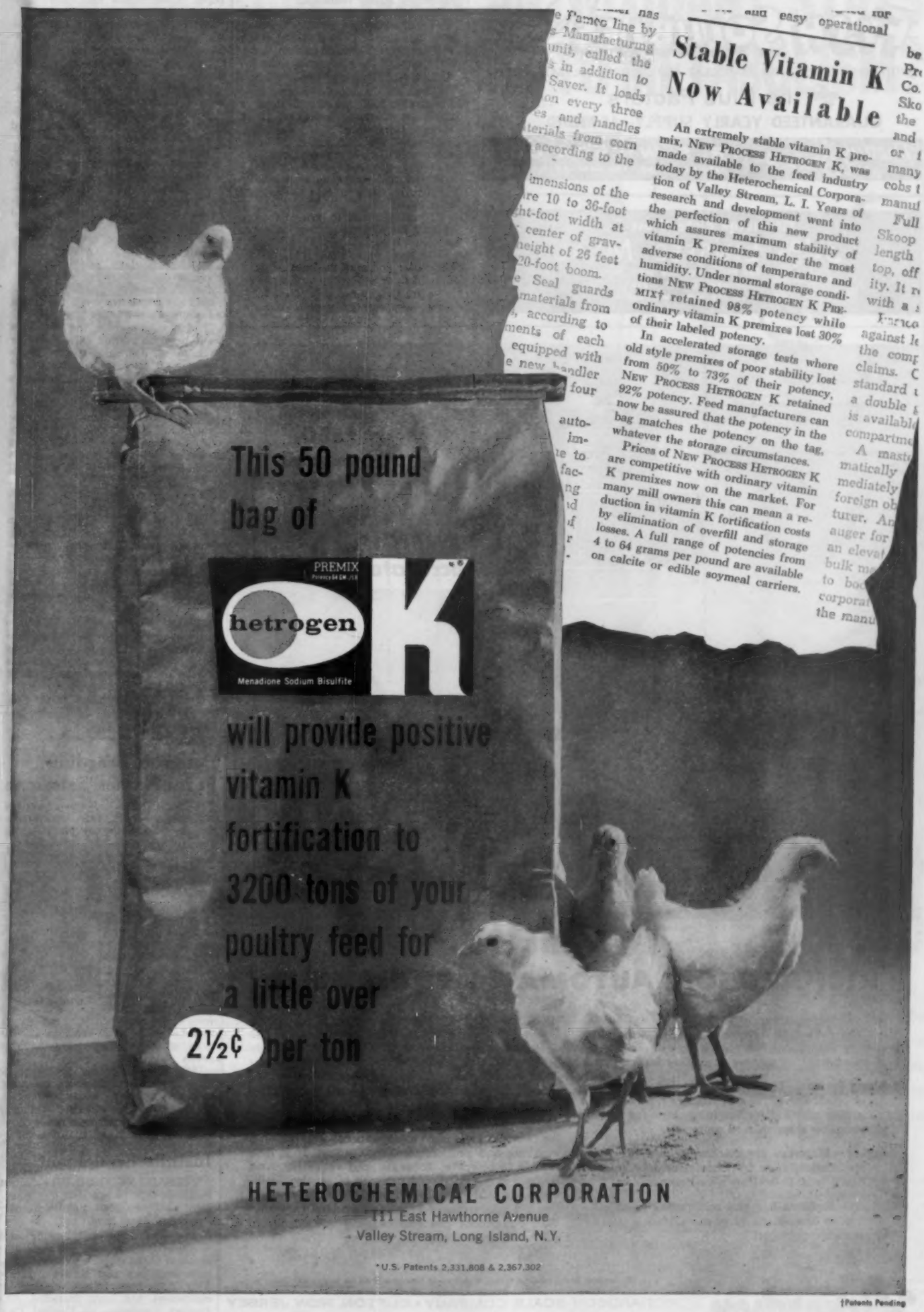

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An extremely stable vitamin K premix, NEW PROCESS HETROGEN K, was made available to the feed industry today by the Heterochemical Corporation of Valley Stream, L. I. Years of research and development went into the perfection of this new product which assures maximum stability of vitamin K premixes under the most adverse conditions of temperature and humidity. Under normal storage conditions NEW PROCESS HETROGEN K PREMIX† retained 98% potency while ordinary vitamin K premixes lost 30% of their labeled potency.

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Prices of NEW PROCESS HETROGEN K are competitive with ordinary vitamin K premixes now on the market. For many mill owners this can mean a reduction in vitamin K fortification costs by elimination of overfill and storage losses. A full range of potencies from 4 to 64 grams per pound are available on calcite or edible soymeal carriers.

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come here, instead of thinking about next week's fishing trip, or—or—" he glared at Milt—"redheads!"

Joe nodded. "We have preached time and again in our sales training meetings that all of us should cultivate customers, should get to know their names, their families, their interests, etc. This test will show that."

"Couldn't I just list the farm girls I know?" Milt asked. "I think I could get the right names on all of them in the county."

"Don't brag," said Smiley. "I know the names of quite a few myself."

"Boys," reminded Joe, "this is a test. Get those ball points working."

"Are you going to leave the room?" Milt asked.

"I was going to ask the same thing," Ed Eggers of the Endeavor branch grinned.

Joe shook his head. "No, I'll sit right here and read the latest copy of Time. I have to keep up on my news."

So Joe took out a copy of the magazine, propped his feet on a table and began to read. His employees meanwhile began writing on the pads of paper, their brows furrowed in thought.

After about 15 minutes, Milt raised his hand. "Teacher, may I leave the room?" he asked.

"Me, too?" asked Butterball suddenly.

"One at a time," Joe said. "I want no washroom comparisons."

Milt got up and went to the washroom, while Butterball sighed and looked at his pad of paper.

In turn, every employee finally got to the washroom, then came back and started writing again.

"Joe," said Smiley Johnson suddenly, "I've got writer's cramp. I've never written so much since I flunked the fifth grade."

"I got cramps, too," protested Butterball.

"All right, let's exercise," Joe grinned.

So he showed the group some hand exercises, which they did for about two minutes.

Then, at Joe's order, the employees went back to writing. After another 15 minutes, Joe said, "Okay, that's enough. I'll take your papers now."

"I got a headache," Butterball moaned. "My brain feels all swelled up."

"Now you know how a businessman feels," Joe chuckled. "We work our brains so hard every day trying to make ends meet that our heads hurt all the time. But you can't tell that to the tax moguls."

He began looking through the papers, then he smiled.

"Well, well, boys. I see that you really do know many of our customers quite well. These papers are going to require some study before I can determine the winners. I hope this little test will show us just how important it is to know our customers and their interests."

Milt Peters sighed. "Joe, I am so glad you don't run a big super market. Wow, the customers that come in there. My brain wouldn't stand a test on that many customers, except maybe the—"

"Don't say it," burst forth Pop. "We know what you mean, you, you skirt chaser."

Peterson Breeding Farm Names Salesman

DECATUR, ARK.—Appointment of Weldon Luker as sales representative in the Southwest for Peterson Breeding Farm has been announced by the firm.

Weldon Luker

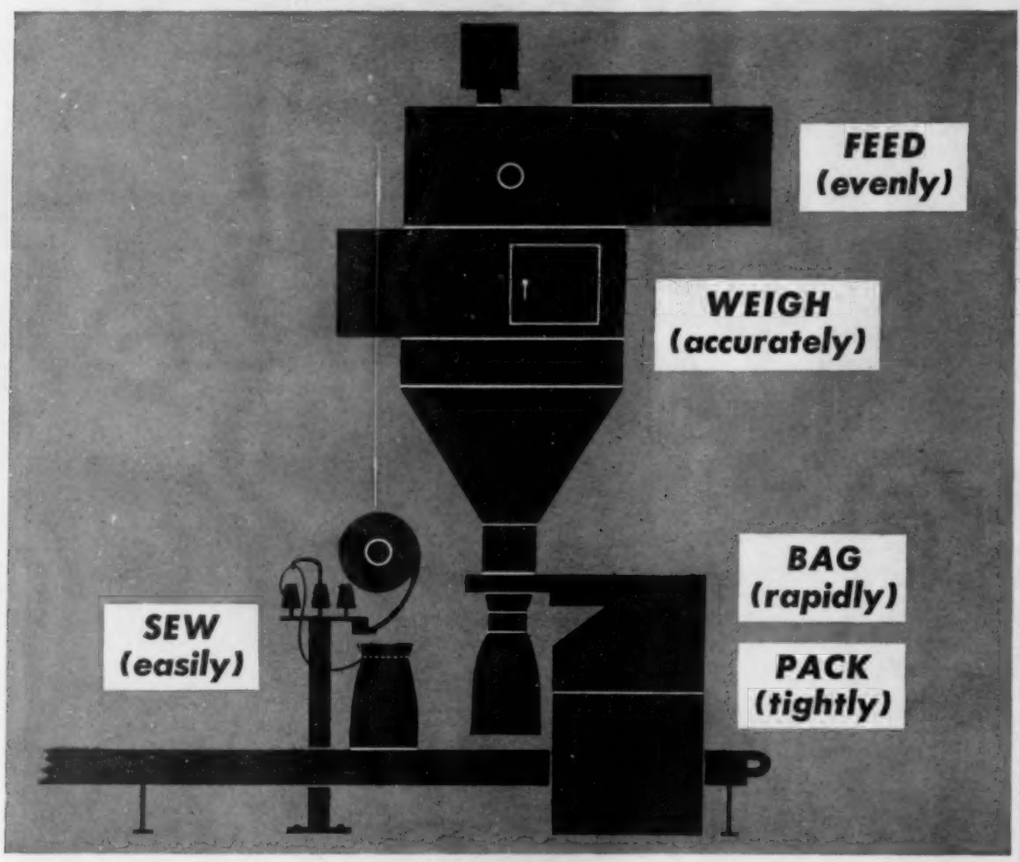
He will make his headquarters in Alexandria, La., and will serve Peterson customers in Louisiana, Mississippi, Texas and southern Arkansas. Mr. Luker has been associated with the broiler industry for 15 years and has been with Western Hatcheries of Dallas, Texas, for the past seven years.

"His wide knowledge of the broiler business, from flock management to sales, assures the poultrymen in his territory of effective personal service," say Peterson officials.

Installs Equipment

VERSAILLES, OHIO—The "latest available type of egg handling equipment" will be installed at the Poultry Producers Assn. here.

This equipment will include such modern developments as automatic removal of blood spots, mass candling, bulk handling and accurate sizing. This is the second time this type of equipment has been installed. The Poultry Producers of Central California is the only other plant that has it, association officials said.



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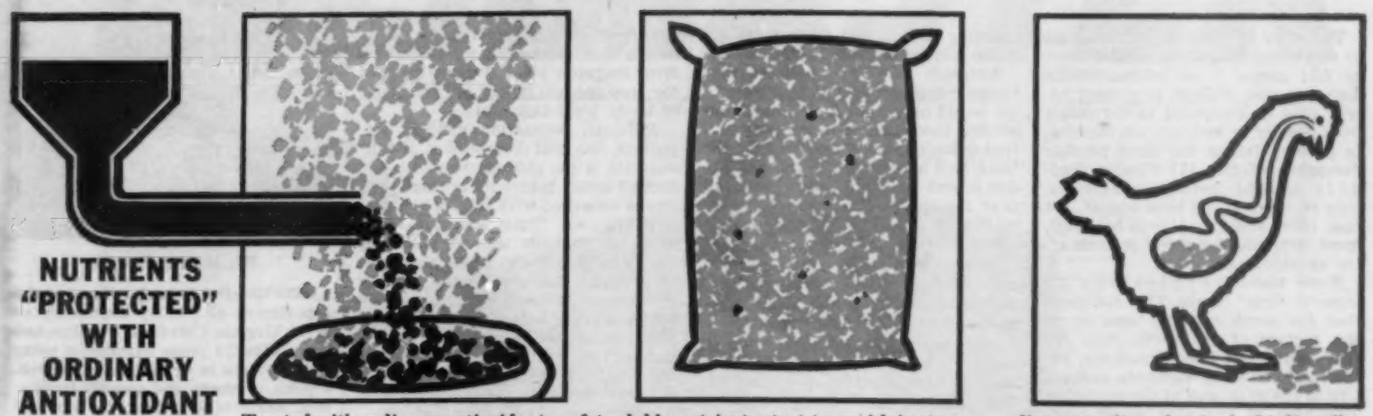

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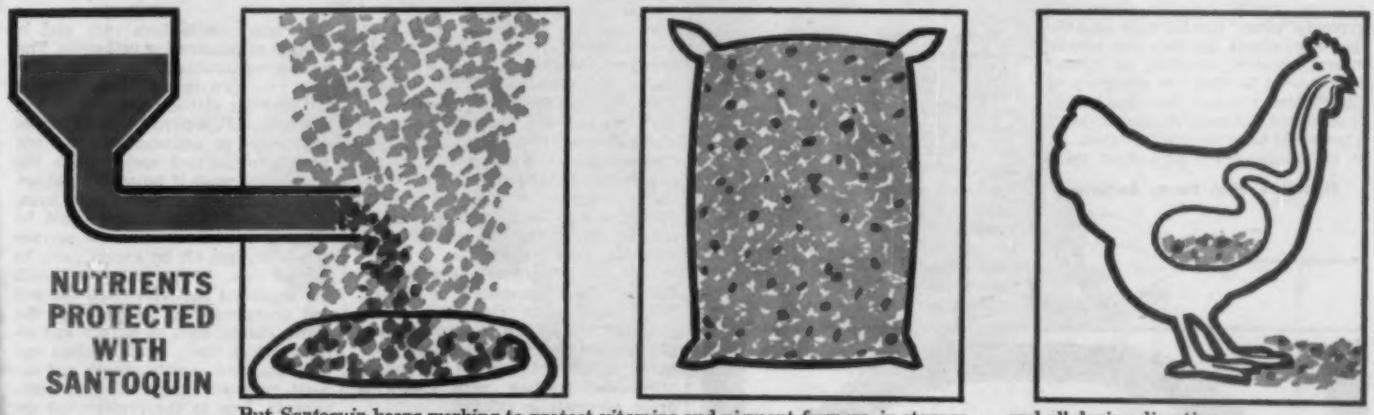

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Prevents rancidity	Yes	Yes
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Improves pigmentation by guarding xanthophylls	No	Yes
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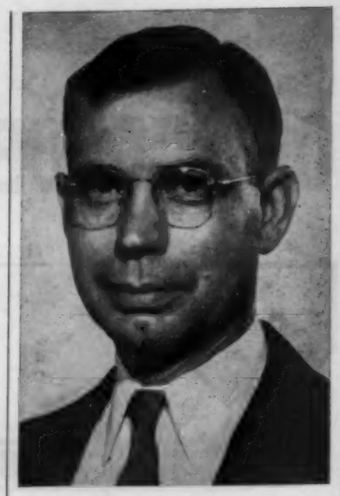
Fallout from Atomic Energy as Related to the Feed Industry

By Dr. Homer Patrick
West Virginia University



Dr. Homer Patrick

AUTHOR—Dr. Patrick is head of the department of poultry husbandry at West Virginia University and has had more than 10 years experience using radionuclides in agricultural research. Fission products and gamma irradiation, along with radioactive minerals required by animals, have been his principal interests in radiochemistry.

The story of "fallout" of materials or debris resulting from atomic energy fuel usages is an internationally discussed one. Fallout in atomic energy may be compared to the debris from powder or hydrocarbon burning. In general, fallout has three possible damaging effects: (1) Fission products ionizing irradiation (gamma, beta rays producing beta burns), (2) heat (fire) and (3) neutron bombardment occurring for a few seconds after an atomic explosion.

Some nuclear explosions are termed "dirty" bombs. This can mean that the bomb explodes near or on the surface of the earth, thus not only casting off fission products, but also making many elements radioactive in the near area of the explosion. This type of explosion would probably result in fission products fallout near the explosion site, whereas, explosions which occur above the ground ("clean" bombs) may send the fission products up into the stratosphere. Another meaning of "dirty" bomb could be that the efficiency of the explosion is such that less energy is produced and more fission products. This could be a mechanical fault or, in the earlier bomb explosions, there probably was a need for a more efficient explosion procedure.

Although reports indicate that bombs which explode in one part of the world may have their fallout appearing thousands of miles away, the feed industry should assume that the bomb will be a "dirty" bomb and the debris and fission products will fall near the site of explosion, therefore, maximum consideration and protection are desirable.

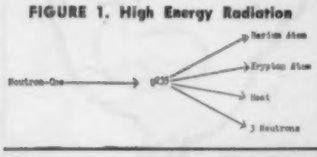
Fission Products — Fission products are formed when Uranium^{235} undergoes a chain reaction. A chain reaction is best illustrated by Figure 1.

The Uranium^{235} does not become all energy which would be 222 billion electron volts of energy per atom, but instead yields approximately 200 million electron volts of energy.

Many isotopes of different elements are formed in the splitting of Uranium^{235}.

These isotopes are called fission products. The most abundant ones are iodine^{131}, strontium^{90}, cesium^{137}, lanthanum^{140}, and barium^{140}. Many others are formed; however, the amounts or short half-life render them somewhat minor. These fission products are generally known as "fallout."

FIGURE 1. High Energy Radiation



Weapon yields place them into two classes, kiloton and megaton. The stratosphere plays an extremely major role for the fallout from megaton yield weapons. The troposphere (less than 40,000-50,000 ft. altitude) is the medium which disseminates the fallout from kiloton detonations. This means that stratospheric fallout is from megaton yield detonations and the tropospheric fallout is from those of lower yield (kiloton).

Although detonation yield is important, the real determinant of fallout rate is the altitude to which the fireball arises before its average density is equalized with that of the surrounding air. The megaton yield weapons' fireballs are so enormous that they stabilize at levels above the troposphere and, due to the absence of moisture, remain aloft for a long period of time before descending into the troposphere where moisture is present. This does not hold true for the larger particles of debris (fallout) which fall to the surface within a few hours after detonation.

The fallout from the stratosphere is worldwide whereas, that from the troposphere is more continental and local fallout (that near the place of detonation) is the principal hazard to the feed industry. The fallout from the stratosphere is about 10% yearly. The small fallout particles, when in the troposphere, become parts of water droplets in the clouds in which the residence time varies with general rain-forming factors. Therefore, in the absence of rainfall, very little fallout will be found near the earth's surface except for that which sticks to grass, trees and shrubs.

Rain, then becomes a medium for freeing the troposphere of fallout. This would place the emphasis on pastures and alfalfa in areas of ample rainfall for crop production. Irrigated crops would receive less fallout than corresponding crops grown in areas adequate in rainfall.

Strontium^{90} is one of the major fission products. It is produced at a level equivalent of about 1 millicurie of strontium^{90} per square mile of the earth's surface for every 2 megatons of fission energy. Having a half-life of about 25 years, and because of its chemical similarity to calcium, this fission product becomes one of the most dangerous ones to control. Strontium^{90} emits beta rays and is capable of penetrating cell walls. The continuous bombardment produced by beta rays can cause tissue damage and diseases of the bone.

Strontium^{90} applied to plant leaves is absorbed or adsorbed and will not move into the root area. This is important, because if fallout should occur in a given pasture or forage area, the radioactive strontium would be found in the leaves or on the surface unless washed off by excess rain. In case of rain, the roots would absorb the deposited material from the soil and translocate to all parts of the plant. Plants, such as lettuce and alfalfa, which have large calcium uptake also will readily absorb and deposit radio-strontium in their components. Due to the preferential usage of calcium over strontium, the high calcium content of soils and the colloidal adsorption property of soils, we find it necessary to have a very large amount of radio-strontium fallout, if the animal is to consume enough by way of forage to obtain a detrimental dose of radioactivity. The accumulative possibility resulting from continuous feeding of contamin-

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ated food to animals could occur in highly contaminated areas. Increasing the calcium content of the ration decreases the strontium uptake by animals.

Cesium[137] is also a fission product and is a gamma emitter. This radionuclide belongs to the alkaline earth group which includes cesium, rubidium and potassium. Cesium[137] is the heaviest atom of this group and rubidium is next with potassium being the lighter of the three. Potassium is a macronutrient required by both plants and animals and moves freely from the leaves to the stems or from the soil to the roots, stalk, stem and leaves of the plant. The potassium can move from the leaves to the dew and hence potassium can be lost from the plant by a type of leaching.

Cesium is different from potassium. It is absorbed from the soil by the small roots, mostly hair roots, but only a small amount ever passes into the main tap root or the remaining parts of the plant. Likewise, only a small amount is absorbed through the leaves or lost by leaching from the leaves. The fact that Cesium[137] is not readily absorbed by the leaves or does not pass freely from the fine root system into the plant or the main root, reduces the possibility of this fission product becoming a hazard in rainy or seasons of moderate rain. During dry seasons, fallout could adhere to the leaves and be consumed by grazing animals; however, its biological half-life is rather short.

Cesium is readily absorbed from the digestive tract and follows biological tissue distribution pattern similar to potassium. Metabolically, it probably does not play any definite metabolic pattern but enters the cells by ionic exchange or molecular exchange. It concentrates in the muscle tissue and has a biological half-life of about one week. Its excretion pattern was thought to follow potassium; however, excretory studies demonstrated that dietary factors such as fiber increase the fecal excretion over urinary excretion. Alfalfa meal, oats, beet pulp and wheat by-products increase the fecal cesium over the urinary excretion. The large cesium molecules are sluggish and are probably easily absorbed, thus reducing the absorption and recycling of this element. Increasing the potassium content of a ration results in greater loss of cesium from tissues and also reduces amount retained.

Iodine[131]—Iodine[131] is one of the major fallout fission products of all the radionuclides used in biological research. Iodine[131] perhaps exceeds them all in usage and will continue being one of the most important ones. Though iodine[131] has a rather short half-life, about eight days, due to its rapid and great concentration in the thyroid gland, its importance is pronounced. The thyroid gland can become damaged if the iodine[131] becomes too concentrated.

Lanthanum[140], **Barium**[140], **and Yttrium**[90]—The other fission products, Lanthanum[140], Barium[140] and Yttrium[90], are of minor importance except for their role in production of external burns when coming in contact with the skin. None are absorbed readily by plants or animals.

Fluorine—Fluorine is not a fission product but is used in production of the purified uranium salt, uranium hexafluoride. If the fluorine is allowed to escape as a gas, it will settle over the country and during a period of dry weather will accumulate on leaves of forage plants.

Fluorosis in cattle is characterized by mottling of the teeth, softening of the teeth, stiffness in the joints in which a dry, "squeaky" sound can be detected when cattle walk.

Poultry is not as sensitive to fluorine toxicity as cattle. When excess fluorine is fed, it accumulates in the bones. It forms fluoroapetite and bones generally contain 100-200 ppm on the dry fat-free basis. In endemi fluorosis areas, or under conditions of abnormal high intake of fluorine in the feed over a long period of time, levels of 1,000-2,000 ppm in bones can be obtained. The fluorine content of bones thus varies with the fluorine content of the ration.

Excess fluorine can interfere with embryonic development. Abnormal cartilage is also observed. The metabolism of inorganic sulfur is influenced. The fluorine appears to speed up the maturation of the cartilage and at the same time reduces new cell formation. This leaves retarded bone growth, normal quantitative bone ash but a soft or probably improperly formed bone crystal due to the influence of excess fluorine on the apetite structure.

Fluorine does not appear to hurt chicks because their high calcium may prevent the high uptake of fluorine. Cattle have a very low calcium uptake, and they are very sensitive to fluorine.

Water, forage, dust on forage, and phosphates are the major fluorine carriers.

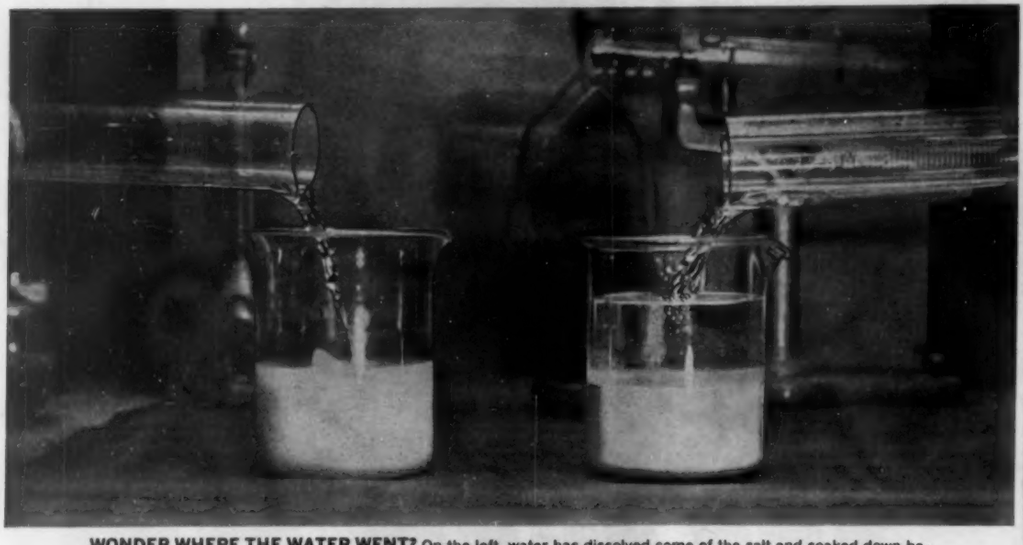
Beta Burns—The small particles or rays emitted during the radioactive decay of many fission products (Strontium[90]) are called beta particles. These particles vary in strength from .6 MEV to 2.18 MEV and they penetrate cell structure in proportion to their strength. The continuous bombardment of the cells can result in cell damage or burns. The common place for external beta burns is in hair or skin folds which will allow the fission products to become lodged so that the beta particles can penetrate in a given area for a long period of time.

The fission products which collect on the body are such small particles that they will go unnoticed until a reddening of the skin is observed. Hair generally turns white in this area and a small "scab" forms in which upon removal the fission products are removed. The scar tissue can be abnormal when compared to other types of wounds.

Fission products are soluble in detergent (complexing) type cleaners, and one should bathe all animals frequently in contaminated fallout areas to prevent beta burns.

Summary — The feed industry

New from Carey Research: Ev'r-Flo Salt



WONDER WHERE THE WATER WENT? On the left, water has dissolved some of the salt and soaked down between the salt crystals of ordinary salt. On the right, the water stays on top—new Carey Ev'r-Flo Salt is not dissolved nor does the water penetrate between crystals. The next step in this test is even more startling. See details below.

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Even under the extreme conditions pictured above, new Carey Ev'r-Flo Salt *flows!* When the water is poured off, you will see! This unusual flowability is the reason why Carey Ev'r-Flo cuts your costs in unloading, storing and mixing. It virtually eliminates caking, lumping and bridging.

Your savings can begin even before Carey Ev'r-Flo enters your plant—you may get a reduction of 10% or more in unloading time. Next, you can increase your salt storage capacity without spending a penny. You can put about 125 tons of Carey Ev'r-Flo in a space usually filled by only 100 tons of ordinary salt. Flowability and higher density makes the difference!

Save salt too. A special process developed by Carey Research makes Carey Ev'r-Flo unusually slippery, free-flowing and "water resistant." Less additive is required, so Carey Ev'r-Flo is actually a "saltier" salt . . . each ton goes further.

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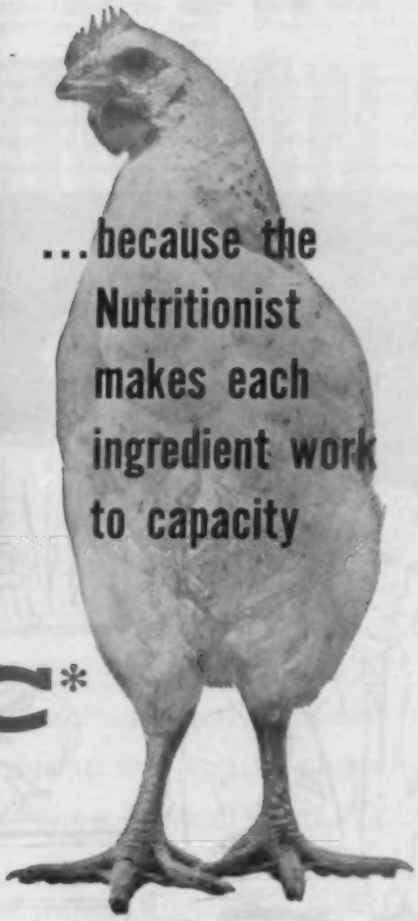

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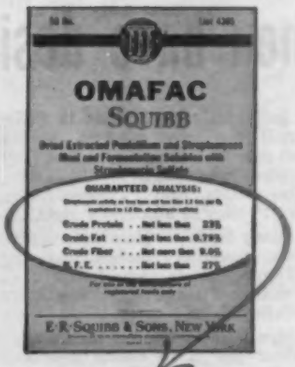

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should recognize the possible detrimental effects of fission products as expressed as fallout from nuclear detonations. Also they must be aware of the fluorine effluent gas resulting during uranium purification and separation.

Strontium[90], due to its similarity to calcium, both chemically and physiologically, and abundance, is the fission fallout radioactive element feared most. Due to the preferential uptake of calcium over strontium and the influence of calcium on the removal of strontium, the feed manufacturers should formulate rations during times of fallout to contain the maximum amount of calcium the animal will tolerate.

Alfalfa, a major feedstuff, should be obtained from arid or semi-arid areas, if fallout is feared.

Cesium[137] concentrates in the muscle tissues of the animal. The feeding of high levels of potassium increases the tissue turnover of this fission product. The failure of cesium to freely pass from the small absorptive root system of plants into the edible parts of the plant helps to prevent this fission product from becoming dangerous.

Iodine[131], perhaps the most widely used fission product in biological research, is readily absorbed and concentrated in the thyroid gland. As iodine, it is the only fission product produced in large amounts which is a nutrient required by animals. Cereal grains and vegetable proteins would probably not become contaminated with iodine[131] to a great enough extent to render them unusable.

Mineral sources (not including bone meal) should not readily become contaminated; however, bones from animals contaminated with strontium[90] would yield a bone-containing radioactive strontium.

If all grain and other feedstuffs are covered and the feed mill is closed for the period required for most of the troposphere to become relatively free of fallout, the future usage of the mill and its feedstuffs should not be impaired.

Fallout or fission products decay by nuclear disintegration and do not make the contacted elements radioactive.

All animals in the area of excess fallout should be bathed using a complexing agent which will make the fission products soluble, thus easy to wash free from animal tissue where, if lodged, it will produce beta burns.

Master Feed Show

EAST ST. LOUIS, ILL.—The Master Feed & Seed Company, Inc., of East St. Louis, Ill., distributor of Master Mix feeds, animal health products, chemicals, hog and poultry equipment and all types of farm supplies, held its first "Spring Show" April 9-10.

Over 200 dealers, their families and key employees attended the program, which featured the theme, "Golden 60's Spring Showing."

Feed Company Field Serviceman Reports On New Sales Trend

By JESS BLAIR
Special Writer

SNYDER, TEXAS — Many of the field supervisors for major feed companies are finding new trends in livestock and poultry management, which entails a different approach to promoting feed sales.

A serviceman who represents several West Texas counties says he has revised his own methods since accepting his present position.

"When I was sent out here two or three years ago," he explained, "it was my idea to develop numerous laying flocks, to help the small dairymen and feeders. After a year or so, I became convinced this was the wrong approach, because so many of these family-sized operations did not succeed. Some of the owners lacked the managerial ability needed; others got discouraged at the first drop in prices."

Now this serviceman tries to select the operators carefully and help them become larger. Instead of having five farm flocks of 1,000 birds each, he finds that one man can take care of those same 5,000 birds, if he has the ability.

The field supervisor says he believes this philosophy is becoming common with most field supervisors. They are convinced that more feed can be sold by helping a few high-calibre operators enlarge their flocks and herds than by working with family-size units.

"A lot of feed selling now-a-days comes from promotion," he said. "We can sell more by working with fewer operators and with people who have a potential for managing well."

Borden First Quarter Sales, Earnings 'Best'

FLEMINGTON, N.J.—First quarter earnings and sales of the Borden Co. set new all-time highs for the period and indicate the best annual rate of return per dollar of sales in about 10 years, Harold W. Comfort, president, reported at the annual stockholders' meeting held recently here. He added that results for the year are expected to top all previous records.

Earnings for the first three months of 1960 rose 20.3% over the comparable 1959 period. They totaled $5,445,618, equal to 55¢ a share, against $4,525,822 or 47¢ a share a year earlier.

First quarter sales totaled $230,012,995, an increase of 4.25% over the $220,644,746 total for the comparable period of 1959.

"Principally contributing to the first quarter gains were improved sales of chemical and specialty food products," Mr. Comfort said, noting that these groups normally carry a higher margin of profit than most other Borden products.

Purina Application

ST. LOUIS, MO. — Application of the Ralston Purina Co. for approval of plans and issuance of a permit under the authority of the secretary of the army to construct and maintain grain loading facilities on the right bank of the Missouri River at a point .75 mile down-stream from the Paseo Highway Bridge is being considered by the district engineer, U.S. Army Engineer District, Kansas City, Corps of Engineers.

these men have designs on your business!

These calculating individuals have plans to make your new feed mill the most efficient, profit-producing operation possible. They figure that they can deliver maximum production, low operating costs, more profitable results. And . . . unless you're the rare exception . . . they're absolutely right!

They're experts in many fields . . . plant automation, efficiency evaluation, machinery design, financing and contracting. They originate radical new ideas and methods to change "it-can't-be-dones" into "I-wouldn't-have-believed-its".

As part of the Myers-Sherman automation engineering team, their job is to create new and better mills and mill equipment. They're the idea men whose revolutionary new concepts are incorporated in every piece of the famous Fords line we manufacture. Mills of their design which are completely operated electronically by one man are already in use and that's just the beginning.

You can put them to work designing your complete new mill . . . or modernizing your present one . . . at our expense! They'll show you how it should be planned to fit your individual needs . . . explain how we can take the whole job off your hands or tackle any part of it you wish . . . give you the details on the 54 convenient Myers-Sherman purchase plans that let you pay as you earn. We can even lease it to you if you wish!

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How the feeding trial was conducted. First, Mr. Jack Kenyon, Jr., agreed to go along with Morton in making a comprehensive pasture feeding trial between Morton Trace-Mineralized Salt and plain salt. When 298 black cattle from Texas arrived at the Kenyon Farms on May 11, 1959, the trial began. The average weight per head was recorded at 443 lbs. Next the cattle were gate cut. 160 were put in one pasture and had nothing but loose plain salt, water and grass; 138 were put in an adjacent pasture and were fed nothing but loose Morton T-M Salt, water and grass.

At the end of the pasture season the cattle were weighed out. The average daily gain per head for the cattle fed Morton T-M Salt was recorded at 1.932 lbs. compared to an average daily gain of 1.578 lbs. for the cattle fed plain salt: a difference of .354 lb. more per head in favor of the Morton T-M fed cattle!

Pasture conditions for both groups were unusually good due to rainfall throughout the test. All cattle were on renovated bluegrass that had been treated with complete fertilizer and lime . . . but still the cattle fed Morton T-M Salt outgained the rest!

The cost of feeding Morton T-M Salt, free choice, was calculated at 1/10¢ per day per head more than feeding plain salt free choice. Based on an average 116 day pasture period, and an average gain of .354 lb. per head per day, your customers get 41 lbs. more gain per head at a cost of about 12¢ more if Morton T-M Salt is fed instead of plain salt!

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USDA Gives Wafer Making Procedure

WASHINGTON—Careful drying of forage is the most important part of the recipe for making high-quality hay wafers, but certain handling procedures are almost equally important, the U.S. Department of Agriculture reports in a recent issue of Agricultural Research.

The methods of wafering several kinds of long forage in windrows were studied last fall by USDA agricultural engineers D. T. Black and J. R. McCalmont at the Agricultural Research Center, Beltsville, Md.

During periods of high humidity, the ARS researchers often had trouble making high-quality wafers. So, they believe better wafers can be made in dry-weather areas, the magazine reports. And while the studies answer many questions about wafering hay, more experiments are necessary.

Here is what the researchers have learned so far:

"Crops—Those adapted to wafering with present experimental equipment include legumes and grass-legume mixtures containing at least 60% legumes. Second and third cutting alfalfa, red clover and timothy, alfalfa and orchardgrass and sericea lespedeza were used successfully.

"Windrows—These were best when formed of uniformly dry forage. Uneven windrows had excessively light sections that lacked the bulk needed to maintain the correct pressure necessary to form good wafers.

"Moisture—Highest quality wafers were made of forage containing 10-14% moisture. But good wafers can be made of forage of much greater moisture content than 14%—if the moisture is evenly distributed. Wafer quality decreases when the moisture content varies greatly within a windrow, because the most desirable pressure cannot be maintained. When the moisture content is higher than 14%, wafering pressure must be reduced to prevent mashing and crumbling.

"Storage—Wafers of up to 14% moisture content were stored safely in depths less than 7 ft. However, more study is needed to determine drying requirements for high-moisture wafers. And the agricultural engineers wish to determine which temperatures, humidities and storage conditions cause heating and mold formation in stored wafers.

"Equipment — Portable wafering machines being developed by commercial firms produce up to 4 tons of wafers per hour. These wafers are square, circular or rectangular and of various thicknesses. This machinery, still experimental, can be adjusted to operate at proper speeds for making wafers from various size windrows, if they are uniform.

"Greater use of wafers seems desirable, since hay is a large and bulky farm crop. More than 100 million tons, about 84% of production, are fed on farms. Harvesting, storing and feeding hay add up to a lot of backaches, even though much is self-fed and partially mechanized handling systems are used.

"Wafering is being studied as a means of reducing bulk so hay can be handled mechanically with minimum hand labor. And wafering is considered a more desirable method of field-processing chopped or long forage for dairy cattle than pelleting hay after it is finely ground."

FRENCH TOAST DISPLAY—Frozen French toast in several convenient packages was on display at the 20th annual meeting of the Poultry & Egg National Board in Chicago's La Salle Hotel. Some of the samples were packaged in black aluminum foil which heats more rapidly in a toaster than conventional foil. Shown examining a sample of frozen French toast from a standard type frozen food container are (left to right): Dorothy Brainerd, food editor of the St. Louis Post Dispatch, and Dr. W. J. Stadelman, department of poultry science, Purdue University.

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Tests Show Hormone Impairs Breeding Ability of Heifers

URBANA, ILL.—University of Illinois animal scientists have conducted beef cattle tests which show that the hormone Synovex-H "seriously impairs" the breeding ability of heifers. Dr. George E. Mitchell, Jr., and his co-workers still recommend the hormone as an implant for heifers, but they do not advise breeding heifers that have received implants.

In the tests, researchers gave Synovex-H implants to a group of 24 heifers. These heifers and a group of 20 control heifers were placed on similar rations. All of the animals were on feed for 112 days.

During the feeding period, implanted heifers outgained control heifers by an 11% margin, Dr. Mitchell reported. The implants, however, produced irregularities in the estrus cycle of every treated heifer.

"The implants did not affect all of the animals in the same way," Dr. Mitchell noted. "Some heifers came into heat repeatedly every three to 10 days. Some never came into heat. Others had cycles of normal length mixed with irregular cycles."

To further check the effect of Synovex-H, the workers placed a bull with heifers in heat during the last six weeks of feeding. Later eight of these implanted heifers were slaughtered. Dr. Mitchell said only one showed evidence of pregnancy.

The University of Illinois beef cattlemen say they believe that stilbestrol may have similar effects on breeding beef heifers.

NEW GRAIN, FEED FIRM

DENVER — Venter and Milburn, Inc., has filed articles of incorporation, listing $40,000 capitalization, to buy, sell, deal in grain, hay, feed, seeds and produce of all kinds. Incorporators-directors are James E. Milburn, Otto Venter and A. Bernice Paulson.

Fleischmann's F·I·D·Y

IRRADIATED DRY YEAST

RICH IN VITAMIN D FOR YOUR FOOTED ANIMALS

RESERPINE

(Continued from page 13)

that when .05% Beta-aminopropionitrile (BAPN)—which produces aortic rupture much like that seen under field conditions—was fed to turkey poults, reserpine at 1.6 and 3.2 mg./lb. reduced mortality slightly, but .4 and .8 mg./lb. were ineffective. When the BAPN level was reduced to .03%, .8 and 1.6 mg. reserpine/lb. were effective in reducing mortality, but .2 and .4 mg. reserpine/lb. were not.

Dr. Barnett reported that in a field outbreak of aortic rupture 1.5 mg. reserpine/lb. of diet eliminated the problem in the treated group while mortality continued in the control group. "This level of reserpine tranquilized the bird," he said. "Hence, lower levels were used in later trials."

Reserpine Use in Canada—Reserpine has been successfully used in Canada to combat aortic rupture, according to Dr. W. D. Morrison, vice president of Toronto Elevators, Ltd. "In all cases where the drug was used, deaths from aortic rupture ceased within 24-48 hours following initiation of treatment.

"In the case of one split-flock test involving 3,200 birds, there were no deaths from aortic rupture during treatment with 1 ppm of reserpine while the negative controls lost 21 birds during the same period."

Aortic Rupture, Plasma Cholesterol and Arteriosclerosis Following Serpasil Administration to Turkeys—Dr. Robert K. Ringer, assistant professor, avian physiology, Michigan State University, reviewed studies conducted at Michigan State on Broad-Breasted Bronze turkeys in an attempt to determine the causative mechanism behind the weakening of the aorta leading to the fatal aneurysm.

He said determinations were made on the influence of long-term feeding of Serpasil on growth, plasma cholesterol and arteriosclerosis of turkeys. Reserpine was fed continuously at .1 ppm and .2 ppm from 1 day of age through 27 weeks of age to floor reared Broad-Breasted Bronze turkeys.

No significant differences were found in body weights in either males or females throughout the growing period, he reported. Plasma cholesterols were measured at 8, 12, 16, 20 and 24 weeks of age. The plasma cholesterol levels rose from 8 weeks of age (153.5 mg.%) to 16 weeks of age (242.6 mg.%) and then plateaued. There was no sex difference in plasma cholesterol levels at these ages. Continuous feeding of low levels of reserpine did not alter the cholesterol levels.

Macroscopic visual scores for arteriosclerosis of the abdominal aorta at 27 weeks of age gave higher values for males than females, Dr. Ringer reported. Histological sections of the aortas stained with Sudan IV showed infiltration of cholesterol within the plaques. Evidence of arteriosclerosis could be seen both macroscopically and microscopically in 8-week-old turkeys. In almost all cases the lesions were on the ventral side of the dorsal aorta in the renal area, the site of frequent aortic rupture.

Some Results on the Effect of Reserpine on the Incidence of Dissecting Aneurysm in Turkeys—Dr. Paul E. Waibel, associate professor of poultry husbandry, University of Minnesota, observed: "Reserpine appears to be capable of reducing the incidence of dissecting aneurysm (massive internal bleeding) in turkeys under certain conditions. Further study on the mechanism of action and optimum usage of the compound in turkeys is warranted."

His report considered two types of dissecting aneurysm: That occurring naturally under field conditions and that produced in the laboratory by dietary administration of BAPN.

Discussing four field experiments, Dr. Waibel noted that in two flocks the use of reserpine appeared to reduce the incidence of dissecting aneurysm and in two other flocks reserpine did not affect the incidence. In three of the four experiments, he said, the experimental flock received .25 ppm dietary reserpine on a continuous feeding basis after hemorrhaging appeared.

Dr. Waibel discussed two laboratory experiments in which turkeys 0-5 weeks of age were used and dissecting aneurysm was produced by dietary administration of BAPN.

In the first experiment, .5 and 1 ppm of reserpine were fed continuously. The higher level appeared to reduce the severity of dissecting aneurysm, Dr. Waibel said. In the second experiment, 2.2 ppm reserpine were fed only during the period of hemorrhaging and, again, the severity of dissecting aneurysm was reduced.

Field Studies of Controlling Internal Bleeding in Turkeys, Using Reserpine—Three studies were made with reserpine by Hubbard Milling Co., Mankato, Minn., to find out if favorable results could be obtained with this drug in reducing the incidence of internal bleeding of turkeys.

George Patrias, director of Hubbard research and nutrition, said in two flocks it was possible to have a control group and a medicated group consisting of toms and hens, whereas in the third flock the control group consisted of hens and the turkeys in the medicated group were toms.

Mr. Patrias said flock A consisted of 1,900 Lancaster white turkeys 8 weeks old when an outbreak of internal bleeding was first noticed. Thirty poults died before medication was started. The control group consisted of 700 birds and the medicated group consisted of 1,200 birds.

The medication schedule consisted of using 1 ppm of reserpine for 7 days followed by .2 ppm of reserpine. During the first nine days three birds died in the medicated group and 12 birds in the control group. "In desperation after the 9-day period the grower placed the control group on .2 ppm level of reserpine for the next 26 days without any death losses," Mr. Patrias related. "There were no tranquilizer effects observed when the 1 ppm of reserpine was fed for 7 days."

Flock B consisted of 2,300 Broad Breasted Bronze tom turkeys. They were 10 weeks old when losses started from internal bleeding. The losses continued for a period of 5 weeks; a total of 73 birds died.

At 15 weeks of age the flock was split into two groups. The medicated groups received .2 ppm of reserpine for a period of 18 days. The losses were as follows: Control group, first 4 days, 8 birds; next 14 days, 33 birds; total, 41 birds; medicated groups, first 4 days, 7 birds; next 14 days, 23 birds; total, 30 birds.

At the end of 18 days both groups were put together and the entire

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flock received .2 ppm of reserpine. "This experiment indicates that an initial level of .2 ppm of reserpine did not stop death losses the first 4 days," Mr. Patrias reported.

Flock C consisted of 4,400 Broad Breasted Bronze turkeys. They were about 13 weeks old when death losses from internal bleeding began to occur in the tom turkeys. The tom flock was separated from the hen flock and both groups were kept on range. The death loss during a 16-day period in the tom flock was 59 birds before a reserpine medication program was started. The hen flock was used as controls, and the tom flock was medicated with reserpine.

The medication schedule consisted of using 1 ppm of reserpine for 7 days followed by .2 ppm reserpine. Two tom turkeys died from the medicated group during the next 11 days, followed by no death losses after 11 days. There were no death losses among the hens.

"It was observed that the next day after the toms had been placed on 1 ppm of reserpine they did not meet the caretaker at the gate when he drove up to feed them," Mr. Patrias said. "They also appeared less active, however the feed intake was normal."

Studies with Serpasil in Laying Hens—Heat stress in laying hens, another problem of some concern to poultrymen, was shown to be significantly reduced with the addition of reserpine to feeds.

Dr. Harold S. Weiss, associate professor of poultry physiology at Rutgers University, reported that in field trials Serpasil was fed to 1,750 January-hatched White Leghorn pullets from housing time (5 months of age) to the end of their normal laying year (total period of 19 months). The dose used was designed to provide approximately .2 mg./bird/day. Performance was compared to that of an equal number of controls.

"During the first 10 months there were no consistent differences between groups," Dr. Weiss said. "During the last 8 months of the laying year, which included a summer period, the Serpasil-fed birds laid at a rate about 5% higher than the controls. Egg quality was slightly better for the treated birds during the summer. Terminal body weight of the reserpine group averaged about .2 lb./bird higher. Mortality was not different over the entire test."

In laboratory trials, after a group of White Leghorn pullets in full production had been on a 2 mg./kg. reserpine-feed for 3 weeks, room temperature was increased abruptly from 70° to 85° F. Two weeks later, room temperature was further increased to 95° F. and maintained there for 6 weeks.

Weekly measurements were made of a number of performance factors and physiological variables. "During the 95° period, rate of lay, body weight, egg weight and shell quality decreased in all birds, but less so in the Serpasil-fed group," Dr. Weiss reported. "Respiratory rate rose in all birds, but less markedly in the treated birds, indicating that the treatment had aided adjustment to the heat stress."

Other Work

A reduction in the mortality of laying hens during a two-day, artificial high temperature and humidity regime, was noted by Dr. Ray E. Burger, assistant professor of poultry husbandry, University of Minnesota, following the addition of reserpine to the diet.

Twelve lines of 48 laying hens each were fed 0, 2.5, 5 and 10 ppm reserpine in the diet. Responses measured included mortality, egg production, egg weight, egg density, shell thickness and Haugh units.

"Reserpine reduced mortality during the first stress period approximately equal to the reduction reported earlier in broilers," Dr. Burger said. "Reserpine increased floor eggs in proportion to the concentration, reaching a level of 16% of the total production at 10 ppm. Reserpine did not significantly alter any of the other responses except egg production which was depressed by high levels of reserpine administration."

Temperature Tests

In a 1958 study involving 3,000 layers over a two-year period under semi-arid conditions in Arizona, Dr. Ernest L. Parker, professor of poultry husbandry, Arizona State University, observed that egg production rates were consistently and statistically in favor of the Serpasil-treated groups.

"In 25 days in July the difference in production rate between the medicated and the control group was 42.9%, in August 36.2%, in September 17.3%, while there was no significant difference in October . . . The mean temperatures for the four test months were: July 99.84° F., August 93.9° F., September 90.5° F. and October 85.6° F.

"There seems to be a correlation between temperatures and differences in production rate: The higher the temperature the greater the effect of Serpasil and vice versa."

In a later (1959) test on a larger scale—involving 5,091 White Leghorn layers—the difference in production rate was "consistently and statistically significant" in favor of the medicated group, "though not as marked as in the 1958 trial."

Dr. Parker said the reason for this phenomenon might be found in the fact that all birds were hit by an early heat wave in June, 1959, which threw them in a partial molt, from which they recovered slowly, while the birds in the 1958 test did not suffer at all prior to the start of the test.

Dr. Parker reported also on a 1959 trial undertaken to investigate the influence of Serpasil on crowded conditions.

A total of 183 Leghorn layers were placed in each of two pens, 20 by 10 ft.—1.09 sq. ft. per layer. The first group was fed with an all-lay mash containing 1 ppm Serpasil, while the control group did not get any Serpasil. A third group of the same variety and age, consisting of 81 birds, was placed in a pen 20 by 20 ft.—4.94 sq. ft. per bird—and was fed the same feed as the control group.

"The average result of this 90-day crowding test showed a production rate of the crowded-medicated group which was 7.87% higher than the crowded-control group and even 4.94% higher than the non-crowded, non-medicated group," Dr. Parker said. "Mortality was the lowest in the medicated-crowded group (56.5% lower than in the crowded-control group and 9.04% lower than in the non-crowded group).

"This trial must be repeated in summer under extreme heat conditions, since it is hard to understand why the medicated-crowded group should perform better than the non-crowded, non-medicated group, except that the 90 days of the test showed unusually low temperatures, so that the crowding seemed to be beneficial for maintaining an optimum temperature."

Vaccination Stress

Another trial was performed in December, 1959, to test Serpasil's effectiveness in combating vaccination stress in baby chicks.

A total of 12,480 baby chicks hatched Dec. 1 were placed on a starter ration with 1 ppm. Serpasil. On the 16th day they were vaccinated against Newcastle disease by the water method. The owner had hitherto a consistently high mortality which started in the third week as a consequence of this vaccination, Dr. Parker noted. No control was kept, and the comparison was based only on former records.

"The figures of the trial with Serpasil showed a considerable decrease in mortality," Dr. Parker observed. "While the mortality figures in the first two weeks did not show any significant difference with the previous results, the third and, particularly, the fourth week showed practically no mortality in the medicated birds."

He said he was aware of the "crudeness" of this vaccination stress and said similar tests would have to be repeated several times, some of them in the summer months combined with heat stress conditions.

Reserpine for Growing Turkeys and Laying Hens—Dr. C. Wendell Carlson, professor of poultry husbandry, South Dakota State College, said reserpine was shown to stop losses from aortic rupture in three field trials he supervised, but "it was impossible to obtain growth and feed consumption data for the field trials." Therefore, a controlled study was initiated at his laboratory to study feed efficiency.

At 12 weeks of age Broad Breasted Bronze poults were placed on an experiment in which the dietary variables were: A regular high energy corn-soy diet, an ultra-high energy diet with 5-7% added fat and reserpine at .5 mg./lb. fed continuously to 26 weeks of age.

"To 16 weeks of age, no consistent effects on growth or feed efficiency were observed," Dr. Carlson stated. "Following this period, the stock re-

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There is no lost motion in a Super-Flo. The flights are made of one-piece, smooth, non-metallic "Screwco" material that does not chip or break. And, they do not need

ceiving reserpine grew at a slower rate and had poorer feed efficiency. The data show, however, that reserpine at .5 mg./lb. can be used for a four-week period without interfering with growth. Normally that would be adequate to control an outbreak of aortic rupture."

He said further studies with Single Cross White Leghorn laying hens in individual cages in a controlled environment — temperature maintained between 60 and 70° F.—have been conducted.

"Although the responses were not significant, the data show a trend for increased egg production by reserpine," Dr. Carlson said. "This was especially true with control diets or those not containing antibacterial agents, in particular the combination of arsanilic acid and furazolidone. A trial now underway shows the same trends, both in the controlled environment and in a cold-wall type house where the temperature dropped to below 32° F."

In laying hen studies, he said, no consistent effects were observed with the use of reserpine upon egg interior quality, egg weight, yolk color or egg shell thickness.

Serpasil for Tranquilizing Geese—The possibility of using Serpasil to tranquilize geese was investigated in the summer of 1959 at Stahmann Farms, Las Cruces, New Mexico, and exploratory tests showed that the geese were readily tranquilized by the drug and were very susceptible to it, reported Dr. Herbert S. Wilgus, vice president, the Ray Ewing Co.

He explained that it is the practice on the Stahmann Farms to keep the breeding flocks and the growing stock over 6 weeks of age in the pecan orchards. Considerable losses in eggs, in body weight and in birds were experienced each time the orchards were sprayed by airplane.

In controlled tests, Dr. Wilgus said, as little as .5 gm. per ton of ration over a period of eight days caused sufficient immobilization to interfere with feed and water intakes and hence with normal gains. Recovery of lost weight was rapid after withdrawal of the drug.

"A level of .0625 gm. per ton of ration fed for three days just prior to removal from the brooder house to the orchard pens at 6 weeks of age has achieved satisfactory and apparently lasting tranquilization of the birds," Dr. Wilgus related. "Extending this level of administration to seven days was found to be excessive."

Miles Names Feed Enzyme 'Milezyme'

ELKHART, IND.—The name Milezyme has been selected to identify Miles Chemical Co.'s livestock and poultry feed enzyme, according to H. F. Roderick, president of Miles Chemical Co. Formerly the enzyme was sold as HT 550F.

Mr. Roderick stated that although the firm's enzymes have been used experimentally in livestock and poultry feeds since 1924 under the "Takamine" label, it is advisable to establish the name Milezyme at this time. This is in keeping with the company's over-all objective of providing strong product identification with Miles Chemical Co. The company was recently formed as one of four major divisions of Miles Laboratories and consolidated, into a single entity, Takamine, Sumner and citric acid operations.

W. J. Ferracone, sales manager, pointed out that the Food and Drug Administration has given Miles Chemical Co. the go-ahead to produce and sell the firm's enzymes for use in nonmedicated livestock and poultry feeds. He said this go-ahead is "triggering a full scale research, development and promotional program at Miles."

A nation-wide network of agents specializing in feed ingredient sales will handle the sale and distribution of Milezyme to manufacturers and consumers, he added.

EGG PROMOTION BUDGET

TAMPA, FLA.—The Florida Egg Commission has approved budgets totaling $92,050 to carry out its function of promoting sales of Florida-produced eggs during the coming fiscal year. The commission's budget lists $46,000 in anticipated revenue from excise taxes, a $5,000 cash balance, $20,000 in federal matching funds, $15,000 from the Florida State Department of Agriculture, and $6,050 from other sources.

The new budgets, approved April 27, call for expenditures of $25,780 for salaries.

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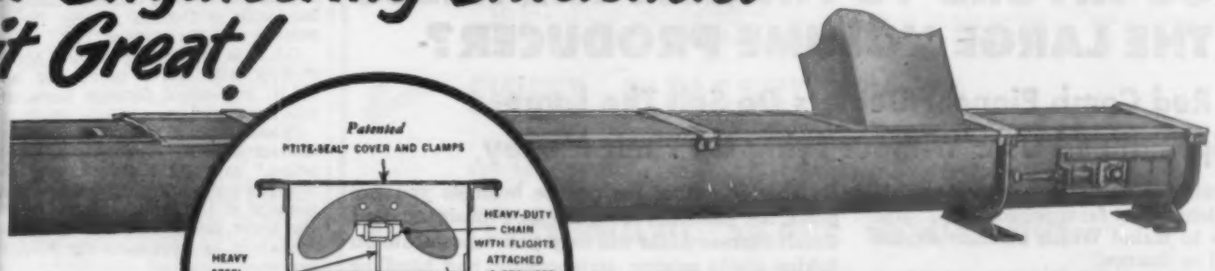

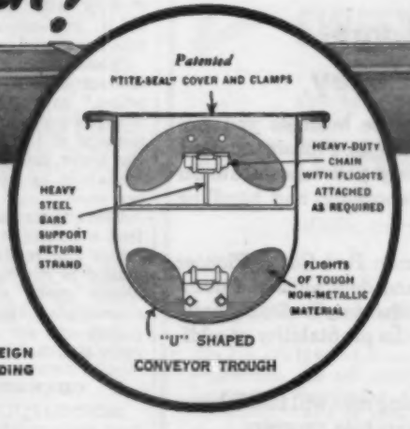
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terial that does not chip or break. And, they do not need

NEBRASKA

(Continued from page 10)

vals of once per day, two times per week and once per week. Researchers report, however, that this test should be repeated for several years before any conclusions are drawn.

Hormones, feed additives for fattening cattle—Testosterone implants increased steer gains and feed efficiency approximately 10%. Another hormone implant, Synovex (containing one gram progesterone and 20 mg. estradiol benzoate) also increased steer performance approximately 10%. The addition of 5 mg. of diethylstilbestrol in the daily ration improved gains and feed efficiency approximately 8%.

However, the feeding of 10 mg. of tranquilizer in the daily ration showed no improvement in the performance of fattening beef calves.

These observations were made with 100 steers in a 245-day fattening experiment.

Testosterone implants were used to see if leaner carcasses could be produced. Limited data are available at this time. Since castration halts the production of the male hormone, testosterone, researchers hope to find whether or not an implant at castration time would have the same effect on carcass quality and feed lot performance as leaving them uncastrated.

Tranquilizers for calves—Injectable tranquilizers gave no benefit in preventing weight loss or reducing disease incidence at weaning time.

However, getting calves to eat grain before weaning was a good practice as calves adjusted themselves rapidly and the stress at weaning time was greatly reduced.

These tentative conclusions presented at the Feeders Day were reached from an experiment conducted on a Nebraska ranch. Objectives of the research were to determine practices and methods of management which would reduce weight loss and disease incidence at weaning time.

The tranquilizer had no noticeable effect on gains. However, all the calves were quiet and very calm in the weaning corrals. A tranquil effect was observed in the treated calves for approximately 36 hours. After this period had lapsed, it was difficult to tell which calves had been treated.

It appears that practices which involve handling the calves and getting them used to people, corrals and grain before weaning are desirable.

Suncured versus dehydrated alfalfa in rations—In this test, 58 yearling steers were included in two feeding experiments to determine how dehydrated alfalfa compares with suncured hay when harvested at the same stage of maturity and if the estrogen in dehydrated alfalfa is as effective as diethylstilbestrol in increasing the performance of beef cattle in the feedlot.

When 2½ lb. of good quality suncured alfalfa hay pellets were fed as the protein supplement in the daily ration they compared "very favorably" to dehydrated alfalfa pellets. With either suncured hay pellets or dehydrated pellets, the addition of 5 mg. of diethylstilbestrol increased the gains approximately 9%.

Low estrogen and high estrogen dehydrated alfalfa were compared with the addition of 5 mg. diethylstilbestrol in the daily ration and also without it. There was no great difference in the performance of steers between those fed the high or the low estrogen alfalfa.

This might be due, say the researchers, to the destruction of the estrogen in the grinding and pelleting process.

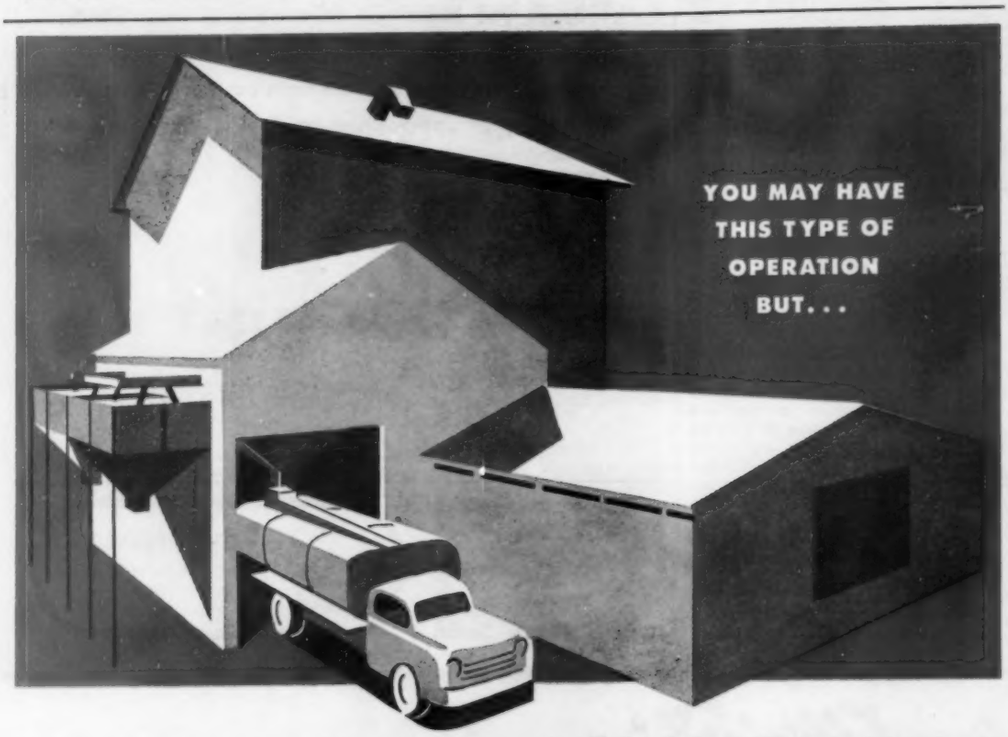
The dehydrated alfalfa meal with the high estrogen content showed a very high uterine response when fed to castrated female mice. When another sample was taken after this dehydrated alfalfa meal was pelleted, reground and then pelleted into a complete ration, the mice assay showed a very low estrogen content.

Why there was no increase in gain when diethylstilbestrol was added to either the low or high estrogen dehydrated alfalfa is not explainable. In nearly all of the previous experiments conducted at this station, the addition of diethylstilbestrol to the ration has shown considerable increase in animal gains.

Wintering calves on low quality roughage — Can a person winter calves on low quality roughage without protein or grain supplementation?

University of Nebraska scientists say yes, if the calves will eat enough of the roughage and if adequate quantities of mineral and vitamin supplements are fed. Large gains should not be expected, however.

It is important that the low quality roughage be pelleted and properly supplemented, too. The addition of a protein supplement or grain supplement increased the gains more than enough to pay for the cost of the supplements. Due to lack of proper type of feed bunks, comparisons could not be made between pelleted and baled hay.



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G.L.F. Exchange Holds Spring Feed Special

ITHACA, N.Y.—A spring feed special "designed to save farmers in the G.L.F. Territory about $12,000 every day" is underway by G.L.F. Exchange, Inc., mills in Buffalo, Albany, Binghamton and Bordentown, N.J.

G.L.F. is celebrating its 40th anniversary with lower prices for all G.L.F. mill-mixed formula feeds, it was announced.

"Exact savings will depend on the amount of feed bought at reduced prices," says G.L.F. Week, the exchange's publication. "Based on feed tonnage at the same time last year, the lower prices would cut patrons' feed bills by approximately $75,000 per week."

There is no limit on the amount of feed a farmer may buy at the lower prices and invitations have been mailed to patrons on mailing lists of nearly every service agency. Announcements also appear in 71 newspapers and are being carried by 45 radio stations.

CHANGES AGENCIES

MINNEAPOLIS — General Mills' feed division advertising and promotion servicing has been reassigned to Knox Reeves Advertising, Inc., Minneapolis, it was announced by W. W. Woodward, divisional advertising manager. The transfer, effective immediately, is a result of changes in agency requirements brought about by new marketing plans of the division, Mr. Woodward said. Klau-Van Pietersom-Dunlap, Milwaukee, has handled the account for the past five years.

Advertisement

Value of Enzyme Additive to Silage Explained by Kistner

H. E. KISTNER
Chief Biochemist
Northern Biochemical Corporation

It might be said that enzymes rule the world. All plant and animal life are subject to the action of these protein molecules to build energy, release it to produce work and heat, as well as control all of the metabolic and katabolic processes.

Enzymes therefore are not new chemical compounds, but are as old as life itself. The knowledge of how enzymes function is comparatively new, however, and we are just beginning to learn how to harness these important compounds and "break" them to work for our benefit.

Enzymes Active in Silage

The green material cut for silage, for example, is abundantly supplied with a good many enzymes. When it is properly cut and packed in an air-tight silo, these enzymes will preserve the material by their action upon the proteins and carbohydrates contained within the material itself, assisted secondarily by the enzymes produced by yeasts and bacteria which are native to the material being ensiled. If conditions were always ideal, everyone would make perfect silage every time. Unfortunately—as people have experienced when silage turns out poorly—many variables exist.

These variables are subject to control by applying good practices to silage making. But even so, you cannot control the number of undesirable putrifying and butyric acid forming organisms which are also present in the material along with desirable organisms.

That is why we developed ENsilose. It is produced by fermenting pure sucrose sugar which is placed upon a carrier that is easily added to the green material. Ten pounds of ENsilose is added to each ton of green material by sprinkling it on top of the load or on top of the material between loads. It can be added by an adapter on a blower or hand fed.

Faster Fermentation

This prefermentation produces sugar derivatives which encourage the growth of favorable organisms in the silo and discourage the growth of unfavorable ones—just as would the enzymes in the original material under ideal conditions. But instead of waiting for favorable organisms to develop naturally, ENsilose introduces them at the beginning of the ensilage process and stops the multiplication of unfavorable organisms by depriving them of oxygen. A large part of the fermentation process is completed in 48 to 72 hours at low temperatures—before the causes of sourness, bad odors and mold can develop.

These low temperatures minimize the destruction of protein, fat, vitamins and N.F.E. by heat. The ability of the ensiling enzymes to break down high-fibre materials into valuable nutrients increases during this period.

Enzymes with activity involving hydrolysis seem to increase the dry matter content of silage when added to the green material. This increase ranges from a small percentage to a very considerable increase.

Enzymes are not considered to be used up or consumed in their activity. Therefore, the greater enzyme development achieved by adding ENsilose remains in the silage, greatly affecting its utilization as feed. This explains why ENsilose not only increases the quality of the silage, the amount of dry matter, but also why animals require less treated silage to make the same gains.

FREE SAMPLES OF ENsilose OFFERED

Northern Biochemical Corp. offers packagers, dealers and farmers samples of ENsilose sufficient to make up a 20-lb. bag of silage.

As soon as grass or legumes are large enough (don't wait for a stage of maturity for this), take out a rotary lawn mower and cut off about 40 lb. Split into halves and put 20 lb. in each of two plastic bags. Mix the ENsilose sample through one bag. Pack down well, being careful not to puncture the bags, tie shut and wait two or three weeks. Open and see the difference! Have any tests made by laboratories that you wish. You be the sole judge and jury.

NOW YOU CAN PACKAGE *ENsilose*

THE ENZYME-BASED SILAGE ACTIVATOR THAT DOES ALL THIS:

✔ LOWERS FEEDING COSTS

Animals require less treated silage to make the same gains, or make greater gains when fed equal amounts of ENsilose-treated silage. (Test data and feeder reports shown in literature).

✔ THREE TIMES THE LACTIC ACID

Samples from six silos in southwestern Minnesota showed the three silos treated with ENsilose averaged three times the lactic acid content as the untreated silos. This amounted to approximately one pound of lactic acid per hundred pounds of untreated silage against three pounds per hundred of treated silage. A pound of lactic acid is worth 2.8 pounds of complete cattle ration.

✔ INCREASES TOTAL ENERGY AVAILABLE

Added calories per ton of ENsilose-treated silage equals the calories in ¾ bushel of corn. This would be equivalent to adding about 7½ bushels of shell corn to 10 tons of silage.

✔ NO LOSS THROUGH SPOILAGE

Eliminates spoilage when air is closed off from surface of the silage. Far less spoilage even when silage is exposed to air.

✔ 5 TO 21% MORE DRY MATERIAL

Consistent increases in dry matter indicates the enzyme action takes up water and converts it into nutrient materials.

✔ MORE APPETIZING FLAVOR

Makes silage animals will relish because it tastes better. When offered both, cattle invariably prefer the ENsilose-treated silage. No waste.

✔ SWEET, PLEASANT AROMA

Silage retains odor of fresh material with a slight fermentation tang. No disagreeable odor clings to clothing after handling ENsilose-treated silage.

✔ ECONOMICAL SILAGE INSURANCE

Only ten pounds used per ton of silage guarantees excellent silage of all kinds — grass, alfalfa, corn, oats, sorghum, beans, etc.

Complete Packaging Program

You can add ENsilose to your line of packaged feeds and supplements, and sell under your brand name. Northern Biochemical Corporation offers regional and national advertising to help all packagers, plus dealer advertising, direct mail, point-of-purchase, and other promotion aids at cost.

Before you consider any silage preservative or silage sweetener—learn how much MORE you can offer with ENsilose!

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NORTHERN BIOCHEMICAL CORPORATION
Dept. F-6, Sheldon, Iowa

Gentlemen:

Please send complete information, test reports, testimonials, literature and list of sales aids, sample prices and packaging program for ENsilose.

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Company .....

Address .....

Town .....

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Classified advertisements received by Tuesday each week will be inserted for the issue of the following Saturday. Rates: 20¢ per word; minimum charge $3.00. Situations wanted, 15¢ a word; $2.25 minimum. In figuring cost of your classified ad . . . each word, abbreviation, telephone exchange and number, set of initials, or group of figures counts as a word. To the number of words in your want ad itself add six (6) words for your name and address or name and address of your firm. This applies for both direct-reply ads and for blind ads containing a box number. If an ad is keyed, care of Feedstuffs, 25¢ per insertion additional charged for forwarding replies. Commercial advertising not accepted in classified advertising department. Display advertising accepted for insertion at minimum rate of $13.00 per column inch. No discount on ads ordered for more than one insertion.

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MACHINERY WANTED

ALL KINDS OF GOOD USED GRAIN processing machinery. E. H. Beer & Co., Inc., Baltimore 24, Md.

WANT GOOD TRACK SCALES — ADVISE location, condition (no junk), price, make, age. C. E. Carter, Odessa, Mo.; Phone 196.

WANTED—ONE (3-TON) NO. 848 HOWES Eureka mixer, without motor. O. W. Meyer, Napoleon, Ohio.

WANTED—BULK SEMI TRAILER TYPE feed truck. 12 ton capacity. Address Ad No. 5864, Feedstuffs, Minneapolis 40, Minn.

WANTED TO BUY — RICHARDSON scales, bag closing machines and other good mill, feed and elevator equipment. J. E. Hagan Mill Machinery, Jefferson City, Mo.

WANTED: GRAIN STORAGE ELEVATORS, midwest location $0,000 bushels and up; lease or purchase; please state full details as to price, location, loading and unloading facilities, etc. Address ad No. 5804, Feedstuffs, Minneapolis 40, Minn.

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LIVESTOCK POWDER SALESMAN FOR direct sales, hiring dealers, conducting periodic sales meetings. Starting salary $8,000 per year, potential $15,000 per year plus expenses. Address Ad No. 5879, Feedstuffs, Minneapolis 40, Minn.

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We are a leading feed ingredient manufacturer looking for a new president for our sales division. Our idea of a president is the whole hog — a person who can take a new feed product, sell it aggressively, supervise a sales force and create new marketing opportunities. Here's your opportunity to be your own boss if you're that good, and want a real challenge. Large salary, profit sharing and liberal benefits are on tap for the right man. This person must be acquainted with nutritionists and mill executives along eastern and southeastern seaboards. Selling experience to feed mills and mixers required. At least one advanced degree in animal nutrition desired. Send detailed resume in confidence to ad No. 5847, Feedstuffs, Minneapolis 40, Minnesota.

HELP WANTED

ASSISTANT MANAGER FOR FEED OPERations. Stanton's Shopping Center, P.O. Box 231, Alvin, Texas.

EXPERIENCED FEED SALESMEN TO sell dried molasses and new expanded dog food. Write us as to qualifications, territory desired and salary requirements. Doane Feed Products Co., P.O. Box 1106, Joplin, Mo.

AGGRESSIVE SALES MANAGER WHO can organize, select and train feed salesmen. Must be promotion minded. Give complete details as to experience and qualifications in your first letter on this excellent opening. Dr. Macdonald's Vitamized Feed Co., Inc., P.O. Box 787, Fort Dodge, Iowa.

AGGRESSIVE FEED MANUFACTURER IN Southeast has opening for understudy for plant superintendent. Applicant should have some technical and mechanical background. Maximum age 35. Good salary and wide open future. Address Ad No. 5871, Feedstuffs, Minneapolis 40, Minn.

WANTED—AREA MANAGER, NINE TERritories, new position, progressive midwestern feed manufacturer, full line tonnage, experience necessary. Managing men, selling new dealers and developing present ones. Present employees may answer this ad. Give complete resume with kodak picture attached. Address Ad No. 5877, Feedstuffs, Minneapolis 40, Minn.

MAN COMPLETELY FAMILIAR WITH feed mill and conveying equipment. Prefer one with drafting experience. To help on estimates, also field work, etc. Must be experienced. Age 30 to 40. Office located Kansas City, Mo. Write stating qualifications, previous experience, salary expected. Combs-Smith, 7032 Dearborn, Overland Park, Kansas.

REGIONAL SALES MANAGER

Company manufacturing and marketing feed additive products is looking for a Regional Sales Manager for the Midwest. Proven experience selling to feed manufacturers and college training necessary. Write full details of background. Our salesmen know of this ad. Address ad No. 5893, Feedstuffs, Minneapolis 40, Minn.

SALESMAN

Progressive organization manufacturing and selling feed additive products is looking for a salesman to handle expanded Northern California sales activities. Should have college training and several years' proven experience selling to feed manufacturers. Write giving details of background. Our salesmen know of this ad.

Address Ad No. 5870, Feedstuffs Minneapolis 40, Minn.

Wanted:

TWO ANIMAL HEALTH CREATIVE WRITERS

Real opportunity for veterinarian or Agr. College graduate with proved experience in writing effective animal health copy. Must know difference between staphylococci and streptococci, and what happens to the microflora in gut of chicken after prolonged feeding of broad spectrum antibiotics . . . and be able to transform such scientific facts into semi-technical literature and easy-to-read material that the average producer or dealer can understand. If you know this industry and can produce sparkling, factual copy from word "Go!" an excellent position awaits with professional account team serving expanded service program of fast-growing Animal Health and Feed Additive manufacturer for midwestern 4-A agency. If you can fulfill these requirements and wish to improve your present and future, write fully, in confidence. Our people know of this ad.

Address ad No. 5888, Feedstuffs, Minneapolis 40, Minnesota.

MACHINERY FOR SALE

13½-TON TOLEDO DIAL SUSPENSION hopper scale, like new, 33 inch dial, Model 2500. O. W. Meyer, Napoleon, Ohio.

ONE 10x36 McGEHEE ALFALFA DEHYdrator, fire box, cyclone. Ready to load. C. E. Carter, Odessa, Mo.; Phone 196.

FOR SALE—6,000 GAL. LIQUID MOLASSES storage tank. Albany Roller Mills, Albany, Minn.; Phone 5-4246.

1955 DAFFIN MOBILE MILL—GOOD CONdition. Priced $6,500. Menton's Feed Service, Pemberton, Minn.

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WHIRLAWAY AIRBLAST CAR LOADERS, cast iron pulleys, new and used feed and elevator equipment. Hagan Mill Machinery, P.O. Box 574, Jefferson City, Mo.

CHAMPION MOBILE GRINDER AND mixer units. Champion Portable Mill Co., 2105 Como Ave. S.E., Minneapolis 14, Minn.

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MOO--ORE NEWS IN FEEDSTUFFS

Foreign Feed Market Developed by G.L.F.

ITHACA, N.Y.—Farmers in Africa, Asia and South America are now G.L.F. Exchange, Inc., patrons, according to G.L.F. Week, the exchange's publication.

The article notes that within the past few months, G.L.F. feed has been shipped from the Bordentown mill to Liberia in Africa, Lebanon, Iceland, Haiti in the Caribbean, the Central American republics of Nicaragua and Panama, and Surinam (Dutch Guiana), South America.

Foreign shipments have been mostly poultry feeds and are generally current G.L.F. formulas. The mills division has been developing overseas trade for about six months and hopes to increase business.

"Demand has been increasing," says Sam Howard, Bordentown mill manager, "as other countries learn the advantages of growing their own poultry."

Inquiries are routed to G.L.F. by E. Holzer, Inc., New York exporter of agricultural commodities. Foreign buyers are looking for seed and fertilizer as well as feed, says Mr. Howard.

Quotations have been sent recently to many countries, including, in the Caribbean: Jamaica, Bermuda, Curacao, Trinidad, Cuba and the Dominican Republic; in Central America: Canal Zone, Guatemala, Costa Rica and Honduras; and to Iran, Greece, Iraq, Italy and Cyprus.

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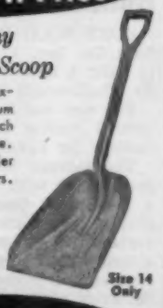

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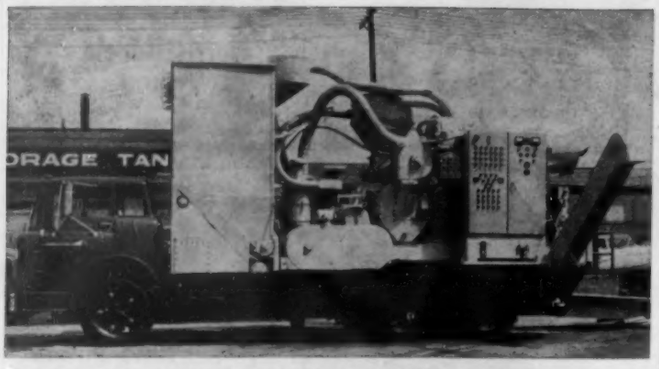

MOBILE PELLET MILL—This is the new Mandak Mobile Pellet Mill, demonstrated last week in Minneapolis. It is described as a complete feed plant on wheels, grinding, mixing and pelleting any type of feed.

New Mobile Pellet Mill Demonstrated

MINNEAPOLIS — A new mobile unit which grinds, mixes and pellets feed was demonstrated here last week.

The new unit, described as a complete feed mill on wheels, was developed by Floyd C. Bowen, a North Dakota rancher, and will be made and marketed by Mandak Mobile Pellet Mills, a firm formed by Mr. Bowen and others in the Mandan, N.D., area.

Mr. Bowen said that the mill, incorporating use of steam and cooling facilities, will pellet any type of feed, including pellets for poultry and swine as well as roughage pellets and complete-ration pellets for cattle. The new unit is mounted on an 18-ft. truck, and it is said to meet highway weight and height restrictions. An earlier pilot model, assembled on a van trailer, has been operating in South Dakota.

Mr. Bowen said that the mill, operated by two men, will have a capacity of 4 to 6 tons per hour on grain-feed pellets and 3 to 3½ tons per hour on roughage pellets. The unit is operated from a push-button control panel on the truck. Cost is said to be "one third to one half that of a stationary mill."

Diesel engine power is used to run the principal machinery, and an electric generator provides power for some of the equipment and light. Engine heat is used to generate steam. A pellet cooling and sifting system is included, Mr. Bowen noted, citing 18 ft. of cooling in a conveyor and discharge chute. The pellet mill is a 100 h.p. California unit, and grinding is done with a Bearcat hammermill. Most of the equipment is specially designed, Mr. Bowen said.

The entire operation is on a continuous flow basis. Hay being processed goes through a bale buster, a set of knives and then the hammermill, from where it is blown to the blender, which includes six hopper-bottom bins with an auger beneath them. Mr. Bowen said the bins, for ground grain, hay and other ingredients, have a capacity of 4½ tons. Special provision is made for adding premixes. After being proportioned and getting a preliminary mix in the blender, the feed is blown to a cyclone and surge bin over the pellet mill. Molasses may be added and final mixing is done in the pellet mill's high speed mixer, the developer indicated.

Mr. Bowen said the unit features automatic feed intake control, automatic blending and automatic moisture control. The mill, he said, is designed to go to the farm or ranch with substantial materials to process, or it may work from elevator to elevator or mill to mill.

The Mandan firm is expected to contract for manufacture of the mill in Minneapolis.

Purina Announces Personnel Changes

ST. LOUIS—E. G. Hotchkiss, manager of the Ralston Purina Co. plant at Kansas City, has been named western division production manager for the company, headquartering in the general offices in St. Louis, it has been announced by David L. Grant, manufacturing vice president.

Mr. Hotchkiss joined the Ralston Purina Co. as a trainee in Omaha, Nebr., in 1947 and transferred to the Minneapolis plant as buyer in 1949, then to Kansas City as assistant manager in 1950. He has been manager in Kansas City since 1952.

W. T. Chafee, who has been western division production manager for the past nine years, returns to Purina's Denver plant as manager. Mr. Chafee previously served in the Denver plant from the time of its opening in 1929 until 1951, first as assistant manager, then as manager. He replaces Otis P. Sherrill, who has resigned because of ill health. Mr. Chafee joined the Ralston Purina Co. in 1923.

J. H. Tully, manager of Purina's Lafayette, Ind., plant, moves to Kansas City as manager there. Mr. Tully joined the Ralston Purina Co. as a buying trainee at Oklahoma City, Okla., in 1952. He transferred to Kansas City as assistant manager in 1953 and to Lafayette as manager in 1957.

S. L. Niebur, manager of the Checkerboard Grain Co. in Minneapolis, transfers to Lafayette as manager. He joined the Ralston Purina Co. in 1948 in St. Louis. He has also served in the Davenport, Iowa, plant as accounting manager, and the Minneapolis plant as assistant manager.

All transfers will become effective June 1.

Central Soya to Build Bulk Storage Unit

FORT WAYNE, IND. — Central Soya Co., Inc., has announced plans to build a new type storage unit at its Chattanooga plant.

The new building will be a single unit, 2 million bushel bulk storage facility for handling soybeans.

The storage unit will be 300 ft. in diameter with dike wall sides and a galvanized cone-shaped roof. An overhead belt conveyor will deliver soybeans to the unit, which contains a tunnel discharge at the bottom for removal of soybeans. Temperature detection equipment will be installed in the new facility.

Construction is scheduled to start soon and is expected to take about five months.

National Ingredients Meeting Plans Readied

DES MOINES—Plans for the annual meeting of the National Feed Ingredients Assn. are progressing, according to officers of the organization.

William E. Noble, Oelwein (Iowa) Chemical Co., president of the NFIA, says that the dates for the meeting are Sept. 14-16 and the place is Liggett's Holiday Inn, Brown's Lake, Burlington, Wis.

He suggests that delegates plan to bring their families since "the resort will offer many opportunities for enjoyment."

FEED BUSINESS SOLD

CANBY, MINN.—Sale of the Erickson Elevator Co. to Dr. M. S. Thorpe and Bennie Madsen, owners of the Canby Hatchery, was announced by Erv Weflen, former owner. New name of the business is Tri-County Feed Co.

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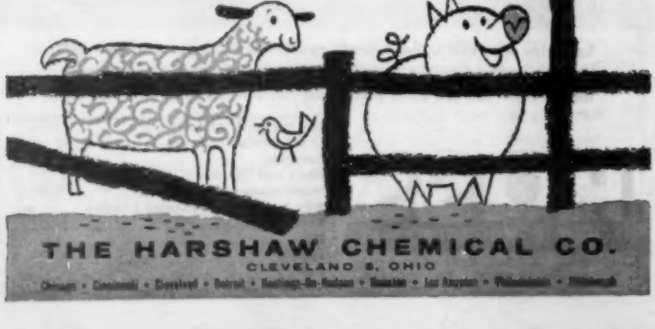

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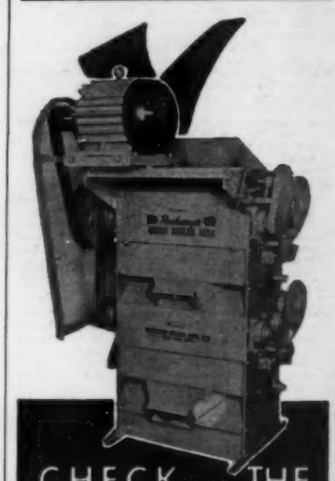

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Breeders Plan Poultry Clinic

CHICAGO—An industry-wise Poultry Servicemen's Clinic in Memphis, Tenn., July 22 will be sponsored by the Poultry Breeders of America, it was decided at the recent first annual convention of the year-old organization. Fifty-one active and associate members registered for the meeting at the Hotel Bismarck.

The group also agreed to underwrite a brochure for international distribution describing breeding and distribution systems employed by North American breeders. The brochure will be printed in several languages.

The one-day Poultry Servicemen's Clinic at Memphis will be a post-convention project following the American Poultry Congress & Exposition, scheduled for July 19-21. The purpose of the clinic is to make poultry servicemen more cognizant of the genetic factors which influence performance of broilers, turkeys and layers, according to a report from the PBA.

Dr. George Godfrey, Honeggers Farms Co., Forrest, Ill., was elected president of PBA, succeeding Dr. W. F. Lamoreux, Kimber Farms, Inc., Niles, Cal. First vice president is Dr. Cecil McClary, Heisdorf & Nelson, Inc., Kirkland, Wash., and second vice president is Richard Irwin, president, Colonial Poultry Farms, Pleasant Hill, Mo. Don M. Turnbull, Kansas City, was re-elected secretary-treasurer.

Active membership in PBA consists of 25 of the nation's leading breeders of laying strain chickens, broiler breeders and turkey breeders. Associate membership is limited to state, federal or dominion experiment station personnel regularly engaged in poultry breeding work.

Purdue Work with Urea, Lysine Cited

NEW YORK—Although all the essential amino acids can be synthesized in the rumen by microorganisms utilizing non-protein nitrogen, recent Purdue University research results point to the definite possibility that lysine is not produced in adequate amounts for maximum performance.

This was noted by Chas. Pfizer & Co., Inc., in a report calling attention to experimental data and comments presented by Purdue animal scientists at the recent Indiana Cattle Feeders Day. (Feedstuffs, April 23 and April 30)

"A new frontier in beef cattle feeding was forecast when scientists at Purdue reported impressive growth responses in steers from the use of supplemental lysine," Pfizer said.

The report cited work in which adding lysine to supplements containing urea improved daily gain and feed efficiency, and it noted Dr. W. M. Beeson's comments that fortification of high-urea supplements with amino acids may be the key to utilization of larger amounts of urea in cattle diets. As noted by Pfizer and Purdue workers, Pfizer nutritionists previously reported successful results with supplemental lysine for steers. In the Purdue work, 1 lb. of a high-urea 64% protein equivalent supplement was equal to 2 lb. of a 32% supplement.

"Up to now a limiting factor in urea feeding has been that cattle cannot effectively utilize more than one third of their protein requirement from urea," Pfizer noted. "But the Purdue scientist feels that if all the nutrients necessary for the bacterial synthesis of protein in the rumen can be identified, cattle should be able to meet their supplemental protein needs essentially from non-protein nitrogen (urea)."

Tested at Purdue was the Pfizer lysine product, L-lysine hydrochloride, made available in early 1959 as a feed supplement.

USDA Notes $444 Million Decline In Egg, Chicken, Poultry Gross Income

WASHINGTON — Gross income from eggs, farm chickens and commercial broilers dropped $444 million in 1959 from 1958, according to a U.S. Department of Agriculture report issued this week.

Gross income totaled $2,696 million in 1959, compared with $3,140 million the previous year, USDA said in its annual report on poultry production.

Eggs had a slightly lower percentage of the 1959 gross income and broilers gained slightly. Of the 1959 gross income 60% was from eggs, 34% from commercial broilers and 6% from farm chickens, compared with 62% from eggs, 32% from commercial broilers and 6% from farm chickens in 1958.

Cash receipts from the sale of eggs, farm chickens and broilers in 1959 accounted for $2,527 million or 94% of the gross income. The remainder represented the value of products consumed on farms where produced.

Here are some of the highlights of the report:

- The average price per dozen eggs sold in 1959 was more than 7¢ below 1958, with production up from 1958 by almost 1.7 million.
- Broiler production was up by 71 million from 1959, but a drop in average price received by producers of 2.4¢ per pound resulted in an 8% decline in gross income.
- Although 8 million more farm chickens were sold in 1959 than 1958, much lower prices resulted in a 21% drop in cash receipts.
- Numbers of chickens on farms Jan. 1, 1960, were off by 4% from the same date a year earlier.
- Farmers used 10% less eggs for farm and custom hatchings in 1959 than in 1958.
- Combined sales of farm chickens and commercial broilers were up 5%, but the average price per pound live weight was off by 2.4¢ with a result that total value of birds sold was down by $110 million.

Details of the report, by section, follow:

EGG AND FARM CHICKEN PRICES—The average price per dozen eggs sold in year 1959 was 31.1¢, compared with 38.3¢ in 1958. Egg prices were lower than a year earlier in all months of 1959 and substantially lower in every month except January and February. Egg prices during May and June, 1959, were at the lowest level since 1941. The average price per pound live weight of farm chickens sold in 1959 was 10.9¢, compared with 13.9¢ in 1958.

EGG PRODUCTION—Egg production in 1959 totaled 62,401 million eggs—3% more than the 1958 production of 60,703 million. Number of layers on hand during 1959 averaged 304 million, compared with 301 million in 1958. The annual rate of lay in 1959 was at a record level of 206 eggs per layer, compared with 201 eggs in 1958. Gross income from eggs in 1959 was $1,618 million, 16% less than the $1,936 million in 1958. The sharp decrease in average prices received by growers more than offset the increase in egg production.

SALES OF FARM CHICKENS—Farm chickens sold in 1959 totaled 232 million birds, compared with 224 million in 1958. About 1,062 million lb. live weight of farm chickens were sold in 1959, compared with 1,047 million lb. in 1958. Cash receipts from sales of farm chickens amounted to $115 million—21% below 1958 receipts. The sharp drop in cash receipts was the result of much lower prices.

CHICKEN INVENTORY — Chickens on farms Jan. 1, 1960 (excluding commercial broilers) totaled 367 million. This was 4% less than the 384 million chickens on Jan. 1, 1959, and 10% below the 1949-58 average. Of the total number of hens and pullets on hand Jan. 1, 1960, 64% were pullets and 36% were hens, compared with 67% pullets and 33% hens a year earlier.

HOME CONSUMPTION OF CHICKENS AND EGGS—Eggs consumed on farms where produced amounted to 4,937 million eggs in 1959, compared with 5,143 million eggs in 1958. Chickens consumed in farm households totaled 103 million, 10% less than in 1958.

COMMERCIAL BROILER PRODUCTION—A total of 1,731 million commercial broilers totaling 5,743 million lb. live weight were produced in 1959. The average price received by producers for this record production was 16.1¢ per pound live weight, 2.4¢ per pound less than in 1958. Because of lower prices received for birds in 1959, gross income from broilers at $922 million was 8% less than in 1958. Georgia led all states in number of broilers produced in 1959 with 18% of the nation's birds, followed by Arkansas and Alabama with about 9% each, North Carolina with 8%, Texas with 7%, Mississippi with 6%, Maryland and Delaware with 5% each and Maine and Virginia with 3% each. These 10 states accounted for 74% of the 1959 broiler production in the U.S.

DEATH LOSS—Death loss of layers on farms in 1959 was 21%, compared with 22% a year earlier.

EGGS USED FOR FARM HATCHINGS—Farmers used 54 million eggs for farm and custom hatchings in 1959, 10% less than in 1958. Of the total chickens raised on farms in 1959, about 4% were hatched on farms and 96% were bought from commercial hatcheries.

TOTAL SALES OF FARM CHICKENS AND COMMERCIAL BROILERS—Combined sales of farm chickens and commercial broilers in 1959 totaled 6,804 million lb., 5% more than the combined sales of 1958. The average price per pound live weight received for sales was 15.3¢, compared with 17.7¢ in 1958. Total value of birds sold was $1,038 million, compared with $1,148 million in 1958. Commercial broiler sales amounted to 84% of the total pounds of chicken meat sold, the same as a year earlier.

Egg and Broiler Production in 1959

State and division	Eggs—Farm Production and Price, 1959: Average number of layers during year thous.	Eggs per layer* No.	Eggs produced millions	Price per dozen cents	—Commercial Broilers—Production and Gross Income, 1959: Number produced —thousands—	Pounds produced —thousands—	Price per lb. cents	Gross income† 1,000 dol.
Maine	3,066	213	653	48.8	58,169	221,042	17.4	38,461
New Hampshire	2,183	208	455	45.3	4,920	25,604	16.8	4,301
Vermont	820	210	172	41.5	860	2,924	17.2	503
Massachusetts	3,443	215	739	45.8	11,046	41,975	17.2	7,220
Rhode Island	417	211	88	45.1	1,581	5,534	17.7	980
Connecticut	3,439	210	721	44.3	26,713	90,824	17.4	15,803
New York	7,859	215	1,686	36.8	11,604	47,576	21.0	9,991
New Jersey	12,121	196	2,379	36.7	5,800	29,000	23.9	6,931
Pennsylvania	17,141	211	3,625	36.1	40,449	145,616	19.3	28,104
No. Atlantic	50,489	208	10,518	39.0	163,142	610,095	18.4	112,294
Ohio	11,681	211	2,463	29.0	15,993	54,376	16.5	8,972
Indiana	11,357	212	2,410	27.9	39,523	134,378	16.0	21,500
Illinois	14,516	205	2,970	26.0	7,064	22,605	15.9	3,594
Michigan	7,993	206	1,645	27.9	3,400	17,280	20.5	3,542
Wisconsin	11,247	213	2,401	27.5	20,261	60,887	16.6	11,435
E. N. Central	56,794	209	11,889	27.6	86,441	297,526	16.5	49,043
Minnesota	17,598	217	3,803	22.9	5,135	16,946	17.8	3,016
Iowa	23,357	216	5,042	23.3	3,354	14,758	16.8	2,479
Missouri	10,337	191	1,970	26.9	39,200	126,440	15.0	18,816
North Dakota	2,764	184	508	22.2	.....	.....	..	.....
South Dakota	7,352	205	1,506	22.4	.....	.....	..	.....
Nebraska	9,295	206	1,915	23.1	2,620	8,908	15.9	1,416
Kansas	8,328	202	1,681	23.6	1,991	6,172	16.6	1,025
W. N. Central	78,941	208	16,425	23.5	52,300	172,224	15.5	26,752
Delaware	647	185	120	42.3	85,127	297,944	17.0	50,650
Maryland	2,128	192	408	36.7	93,289	326,512	17.0	55,507
Virginia	4,687	199	935	37.1	53,971	167,310	14.1	24,927
West Virginia	2,040	186	380	37.1	27,525	93,588	16.9	15,816
North Carolina	9,113	199	1,973	37.7	137,400	453,420	15.2	68,920
South Carolina	3,574	193	691	40.2	16,924	54,157	15.5	8,394
Georgia	7,726	205	1,585	41.4	303,031	1,002,002	15.3	153,000
Florida	4,130	216	891	39.1	10,413	33,322	16.1	5,365
So. Atlantic	34,045	200	6,983	38.9	727,680	2,426,252	15.9	384,589
Kentucky	5,602	178	998	29.4	17,575	57,998	15.3	8,874
Tennessee	5,518	173	953	33.5	27,620	88,384	15.2	13,434
Alabama	5,184	189	982	38.4	158,248	522,218	15.1	78,855
Mississippi	4,661	181	843	40.7	107,629	333,650	15.2	50,715
Arkansas	3,920	190	745	35.5	163,997	508,391	15.0	76,259
Louisiana	1,968	172	338	39.7	21,647	69,270	15.5	10,737
Oklahoma	4,315	182	787	27.2	5,260	16,832	15.1	2,542
Texas	13,029	183	2,384	30.9	115,193	357,098	15.5	55,350
So. Central	44,197	182	8,030	33.4	617,169	1,953,841	15.2	296,766
Montana	1,234	198	244	35.3	.....	.....	..	.....
Idaho	1,435	217	312	33.4	3,348	10,714	18.6	1,993
Wyoming	347	193	67	36.3	.....	.....	..	.....
Colorado	1,530	190	291	31.7	1,245	4,233	18.0	762
New Mexico	632	190	120	38.3	.....	.....	..	.....
Arizona	626	212	133	41.5	704	2,042	21.0	429
Utah	1,794	221	397	30.3	2,051	6,973	20.0	1,395
Nevada	98	163	16	34.9	.....	.....	..	.....
Washington	4,798	228	1,094	34.1	15,985	54,349	18.6	10,109
Oregon	2,918	221	646	36.0	10,723	35,386	17.8	6,299
California	22,884	229	5,236	31.5	49,753	169,160	18.9	31,971
Western	38,296	223	8,556	32.6	83,809	282,857	18.7	52,958
U. S.	303,562	206	62,401	31.1	1,730,541	5,742,795	16.1	922,402

*Number of eggs produced during the year divided by the average number of layers on hand during the year.
†Includes consumption in households of producers, which is less than 1% of total production.

Molasses Imports Up Sharply; Exports Off

NEW ORLEANS — Increases in February imports of feed and industrial molasses and substantial cuts in exports were reported by the U.S. Department of Agriculture.

The 26.1 million gallons of feed and industrial molasses imported in February were sharply higher than the 16.5 million gallons imported in January and well above the 17.3 million imported in February last year.

Sources of imports and respective volume in February, 1960, were: Cuba, 16.7 million gallons; Mexico, 3 million; Dominican Republic, 2.3 million, and Turkey, 1.8 million. The remainder was from other countries.

Exports from the U.S. and its territories amounted to 1.2 million gallons in February compared with 1.3 million in January and 4.1 million in February of last year. Of 1960 exports there were 2.2 million from Puerto Rico, .3 million from the mainland and none from Hawaii.

OFFICES MOVED

CHICAGO—Effective May 2, Riverdale Products Co. moved its offices from 75 E. Wacker Drive, Chicago, to 456 W. Frontage Street, Northfield, Ill. The new telephone number is HIlicrest 6-6353.

The FEED MARKET

PRICE QUOTATIONS, MARKET TRENDS
OF PRINCIPAL INGREDIENTS

NOTE: Quotations on feed ingredients shown in these and adjoining columns are wholesale prices, per ton, bulk, for prompt delivery, unless otherwise noted. They are the latest quotations available from Feedstuffs correspondents and are not necessarily those in effect on date of publication. The prices represent fair average trading values and do not necessarily represent extreme low or high levels at which individual sales might have occurred. A descriptive summary of supply and demand factors prevalent in the feed market appears on page 2.

A AND D FEEDING OIL

Minneapolis: Demand fair; supply ample; 10,000 A 34½¢ lb.; 300 D, 3,250 A 18⅜¢ lb.; 300 D, 1,500 A 17½¢ lb.; 300 D 750 A 16¢ lb.

Chicago: Demand fair; trend steady; supply ample; straight A feeding oil, with 10,000 units vitamin A per gram, 7@7¼¢ a million units of vitamin A, l.c.l., packed in 55 gal. drums, f.o.b. Chicago, drums included.

Boston: Demand and supply steady; 400 D, 2,000 A 21½¢ lb.; 300 D, 3,000 A 21¢; 300 D, 3,250 A 19½¢; 300 D, 1,500 A 18¢; 300 D, 750 A 16¢; 75 D, 750 A 15½¢.

Denver: Demand fair; trend steady; supply good; 2,500 A, 300 D 22¢ lb.

New York: Demand fair; trend steady; supply good; 1,500 A, 300 D 16¢ lb.; 3,250 A, 300 D 17½¢ lb.

ALFALFA MEAL

Chicago: Demand and supply fair; trend much easier on dehydrated, steady on suncured; dehydrated, 17% protein, 100,000 units vitamin A $55.50; suncured, 15% protein $48.50.

Ft. Worth: Demand slow; supply sufficient; sacked: dehydrated, 17%, 100,000 A $52@53 rail or truck; 20% protein, 150,000 A $54@55 truck; suncured, 13%, ¼-in. grind No. 1 $47 truck; 15% fine ground dry $49; with 2% fat added $51 rail or truck.

Kansas City: Demand slow; trend weak; spot cars new crop pressing; 17% dehydrated alfalfa, 100,000 A on arrival, pellets $46@48 bulk, reground pellets $49; 18% dehydrated alfalfa, 125,000 A on arrival, pellets $45@50 bulk, reground pellets $52 bulk; 20% dehydrated alfalfa, 150,000 A on arrival, pellets $46@50 bulk, reground pellets $59 bulk; suncured alfalfa, demand slow, supply tight, 13% pellets $36@37 bulk, No. 1 ¼-in. $37.50 sacked.

Portland: Demand slow to fair; trend mixed; supply adequate; dehydrated $66.40, suncured $45.

Philadelphia: Demand dull; supply fair; 100,000 A $71.

Los Angeles: Demand good; supply ample; trend unchanged; dehydrated meal, 17% protein, 100,000 A, $51@53; dehydrated pellet meal, 17% protein, 100,000 A, $53@55; suncured meal, 15% protein, $49@50; suncured crumbles, 15% protein, $51@52.

New Orleans: Demand fair; supply adequate; trend steady; 17% protein, 100,000 vitamin A, $63@64 bulk; $66@67 sacked.

Cincinnati: Demand fair; trend lower; supply adequate; 17% dehydrated, 100,000 vitamin A pellets $60.

Omaha: Demand slow; trend easy; supply ample; 17% dehydrated, 100,000 A units, bulk pellets $48; sacked meal $53, Omaha basis.

Memphis: Demand fair; trend steady to lower; supply adequate; dehydrated, 17% protein, guaranteed 100,000 units vitamin A $50.

St. Louis: Demand slow; trend steady; supply adequate; suncured, 13% fine, sacked $47; dehydrated, 17%, 100,000 A pellets, demand slow, trend lower, supply ample, bulk $50.

Boston: Demand fair; supply ample; dehydrated, 17% $67.50; suncured, 13% $47.

Buffalo: Demand fair to poor; trend steady; supply fair; $71, sacked, Boston.

Minneapolis: New crop moving; market loosening up; prices down about $5 from last week; 17% dehydrated, 100,000 units A, reground pellets $51; oiled reground pellets $53.

Denver: Demand poor; trend slow; supply ample; $50.

Seattle: Demand fair; trend steady; supply good; 15% suncured $50, delivered truck loads; 136,000 A unit dehydrated $72, delivered truck loads, both sacked.

ANIMAL FAT (STABILIZED)

Kansas City: Demand slow; trend steady; supply ample; stabilized prime tallow 5⅝¢ lb.

Ft. Worth: Demand good; supply sufficient; prime tallow, tank cars 5⅜¢ lb.; drums 5⅝¢ lb., f.o.b. north Texas packing plants with returnable drums.

Chicago: Demand good; trend firm; supply fair; tank truck or car lots, bleachable fancy tallow $6.12½ cwt., yellow grease $5.50 cwt.

San Francisco: Demand fair; supply ample; bleachable fancy 6⅝¢ lb.; yellow grease 5⅝¢ lb.

New Orleans: Demand fair; trend easy; supply adequate; 6⅛¢ lb., tank cars.

Ogden: Supply good; $6 cwt.

Boston: Demand slow; supply good; tallow 6¼¢ lb.; yellow grease 5⅞¢ lb.

Louisville: Demand good; supply fair; trend steady; bleachable white, 6¼¢ lb.; white tallow, 6⅛¢ lb.; yellow grease 5⅞¢ lb.

St. Paul: Demand good; supply adequate; market down; bleachable fancy off another ¼¢ from last week to 5⅝¢ lb., f.o.b. producer's plant.

Salisbury, Md.: Demand excellent; supply limited; 6⅝¢ lb., f.o.b.

BARLEY FEED

Ogden: Supply good; rolled $43@44; whole $38@39.

Baltimore: Demand and supply fair; trend firm; $47.50 sacked.

Los Angeles: Demand fair; trend unchanged; supply adequate; standard rolled $2.85 cwt., standard ground $2.85 cwt., both sacked.

Milwaukee: Demand fair; trend unchanged; supply ample; feed barley 96¢ bu., bulk; barley feed $37.50 ton, sacked; ground feed barley $41.50 ton, sacked; all Chicago basis.

Chicago: Demand good; trend steady; supply fair; $37 sacked.

Portland: Demand active; trend steady to firm; supply adequate; $44@45.

San Francisco: Demand fair; supply ample; rolled $60, ground $59.

New Orleans: Demand slow; trend unchanged; supply adequate; $49@51, sacked.

Philadelphia: Demand slow; supply fair; $45.50.

Boston: Demand fair; supply ample; $48.50, sacked.

Denver: Demand poor; trend slow; supply ample; rolled $1.95 cwt.

Seattle: Demand fair; trend steady; supply good; $45, truck lots.

BENTONITE (SODIUM)

Chicago: Demand fair; trend steady; supply ample; f.o.b. Wyoming and South Dakota shipping points; granular, 30 mesh $16.50, fine granular, 80-100 mesh $13.75; powder, 200 mesh $13.50, f.o.b. Belle Fourche, S.D., minimum 30-ton carlots, 80 granular $13.50 net; 200 mesh, fine $13.25, net.

Cincinnati: Demand steady; supply adequate; f.o.b. Cincinnati, minimum 30-ton carlots: 80 granular $31.50, less than carlots $40; 200 mesh fine $31, less than carlots $40.

Denver: Demand fair; trend steady; supply good; $21.

BLOOD FLOUR

Louisville: Demand slow; trend steady; supply ample; $52.50@57.50, sacked.

BLOOD MEAL

Chicago: Demand fair; trend firm; supply ample; 80% protein, 100 lb. sacks $125.

Los Angeles: Demand fair; trend easier; supply ample; $6.75 a unit of ammonia, sacked.

New Orleans: Demand slow; supply ample; trend steady; $82.50@87.50, sacked.

Portland: Demand quiet; trend easy; supply tight; $115@120, sacked.

Omaha: Demand good; trend strong; supply fair; 80% $105, sacked.

San Francisco: Demand and supply fair; $6 a unit of ammonia, sacked.

Ogden: Supply good; $90 in 100 lb. bags, f.o.b. Ogden.

Louisville: Demand dull; trend steady; supply good; $52.50@57.50.

BONE MEAL (STEAMED)

Ft. Worth: Demand slowing up; supply light; sacked, $100, f.o.b. Ft. Worth, local manufacture; imported $82.50, f.o.b. Houston.

Los Angeles: Demand fair; trend unchanged; supply adequate; imported $80, 20 ton lots, sacked.

Chicago: Demand moderate; trend firm; supply fair; $97.50, 100 lb. sacks.

San Francisco: Demand good; supply ample; $75, sacked.

Cincinnati: Demand fair; trend steady; supply ample; $95, sacked.

New Orleans: Demand slow; trend easy; supply ample; $90@100, sacked.

Boston: Demand and supply steady; $105.

Louisville: Demand slow; trend steady; supply ample; $90@100, sacked.

Denver: Demand good; trend steady; supply ample; $105.

Buffalo: Demand good; trend steady; supply ample; $105, sacked.

Seattle: Demand good; trend firm; supply limited; $92, ex-dock, sacked.

BREWERS DRIED GRAINS

San Francisco: Demand fair; supply ample; $54, sacked.

St. Louis: Demand fair; trend lower; supply good; $37.

Milwaukee: Demand and supply fair; trend lower; $36 bulk, $44 sacked.

Chicago: Demand fair; trend easier; supply ample; 26% protein $37@37.50.

Ft. Worth: Demand slow; supply sufficient; 26% protein $47.

Los Angeles: Demand fair; trend unchanged; supply limited; $49.50.

Cincinnati: Demand poor; trend steady; supply adequate; $41.60.

New Orleans: Demand fair; trend easy; supply good; $47@48, sacked.

Philadelphia: Demand slow; supply fair; $48.

Boston: Demand spotty; supply adequate; 24 and 26% $46; 22%, none available.

Buffalo: Demand fair; trend lower; supply good; $45, Boston.

Louisville: Demand fair; supply good; $46.

New York: Demand steady; trend lower; supply good; $46.50 bulk, $55 sacked, Boston.

BREWERS DRIED YEAST

Los Angeles: Demand fair; trend unchanged; supply limited; 10¢ lb. 5-ton lots, sacked; 11¢ lb. 1-ton lots, sacked; 13¢ lb. less than ton lots, sacked.

Cincinnati: Carlots 11¢ lb.; 5-ton lots 11¢ lb.; ton lots 11⅜¢ lb.

Pittsburgh: Carlots 10¢ lb.; 5-ton lots 11¢ lb.; ton lots 11⅜¢ lb.

New Orleans: Carlots 10¢ lb.; 5-ton lots 11¢ lb.; ton lots 11⅜¢ lb., all sacked.

New York: Carlots 9⅝¢ lb.; 10-ton lots 10¢ lb.; 5-ton lots 10⅛¢ lb.; ton lots 11¢ lb., all sacked, f.o.b. New Jersey.

Chicago: Demand fair; trend steady; supply ample; 9⅛@10¢ lb., carlots, sacked; 9⅞@12⅛¢ lb., l.c.l.

Milwaukee: Demand fair; trend steady; supply ample; 10⅛@12⅛¢ lb., ton lots, sacked.

St. Louis: Demand fair; trend firm; supply ample; 9⅛@10¢ lb., carlots, sacked; 10⅛¢ lb., ton lots; 11⅛¢ lb., less than ton lots.

Portland: Demand light; trend steady; supply ample; 11@12¢ lb.

San Francisco: Demand fair; supply good; 10¢ lb., sacked.

Omaha: 10⅛¢ lb.

Boston: Demand steady; supply ample; 11¢ lb., f.o.b.

Buffalo: Demand good; trend steady; supply ample; $9.35 cwt.

Louisville: Demand slow; trend steady; supply ample; 10@10⅛¢ lb., sacked.

Denver: Demand slow; trend slow; supply good; $160.

Seattle: Demand slow; trend steady; supply ample; $12 cwt., sacked.

BUTTERMILK (CONDENSED)

Los Angeles: Demand fair; trend unchanged; supply adequate; 5½¢ lb., 100 lb. lots; 4½¢ lb., 500 lb. lots, both in barrels.

Philadelphia: Demand slow; supply fair; $4.25.

Chicago: Demand quiet; trend steady; supply fair; 500 lb. bbls. $3.30@3.75 cwt.

San Francisco: Demand fair; supply good; $5, drums.

New Orleans: Demand slow; trend unchanged; $4.25@4.30 cwt., in drums.

Ogden: Supply ample; $4.40 cwt., drum.

Boston: Demand and supply steady; $3.95 cwt.

Louisville: Demand dull; trend steady; supply nil; $4.25 cwt. in drums.

CALCITE CRYSTALS AND FLOUR

(All prices net, sacked, including freight)

New York: Crystals $16.28, flour $10.28.
Buffalo: Crystals $17.11, flour $11.11.
Toledo: Crystals $18.96, flour $12.96.
Boston: Crystals $17.63, flour $11.63.
Lime Crest, N.J.: Crystals $11.50, flour $5.50.

CALCIUM CARBONATE

Chicago: Demand fair; trend steady; supply ample; fine grind, plain, 100 lb. bags $9.54; bulk, in hopper cars $7.54; bulk, in boxcars $8.04; granular grind $1 premium.

Minneapolis: Fine grind, 50 lb. bags, $12.75; 100 lb. bags, $12; bulk, boxcar, $10.50; bulk, hopper, $10; coarse grind $1 premium, delivered Minneapolis.

Los Angeles: Demand fair; supply adequate; trend unchanged; flour $10.15, meal $11.15, 20-ton cars, sacked.

Cincinnati: Demand fair; trend steady; supply adequate; $7@7.50 cwt.

Seattle: Demand and trend steady; supply good; $14, ex-warehouse, sacked.

CHARCOAL

San Francisco: Demand steady; supply ample; $141, sacked.

Chicago: Demand fair; trend firm; supply fair; 50 lb. multiwalls $110.

Los Angeles: Demand slow; trend unchanged; supply adequate; hardwood poultry: $150, less than ton lots; $144.40, ton lots, both sacked.

Boston: Demand and supply steady; $110.

COCONUT OIL MEAL

Los Angeles: Demand steady; trend unchanged; supply ample; copra cake $73 @74.

Portland: Demand light and slow; trend unchanged; supply ample; $72.

San Francisco: Demand good; supply tight; expeller $73.

Seattle: Demand fair; trend easy; supply ample; $79, delivered via truck, sacked.

COD LIVER OIL (FORTIFIED)

Boston: Demand good; supply ample; 300 D, 3,000 A 22¢ lb.; 600 D, 2,250 A 20½¢; 300 D, 2,250 A 20¢; 600 D, 1,500 A 19¢; 300 D, 1,500 A 18½¢.

New York: Demand fair; trend steady; supply good; 1,500 A, 300 D 16⅛¢ lb.; 3,000 A, 300 D 20¢ lb.

CONDENSED FISH SOLUBLES

Los Angeles: Demand fair; supply ample; trend unchanged; 2¾¢ lb.

New Orleans: Demand light, trend easy; supply fair; $40@45 ton, f.o.b. Gulf.

Boston: Demand fair; supply plentiful; 2¢ lb., f.o.b. shipping point.

New York: Demand good; trend steady; supply ample; $50.

CORN GLUTEN FEED AND MEAL

(All quotations for all cities are bulk basis, sacked basis $5 more)

Minneapolis: Feed $42.60, meal $44.60.
Atlanta: Feed $47, meal $70.
Birmingham: Feed $45.60, meal $63.60.
Boston: Feed $43.50, meal $71.50.
Chicago: Feed $37, meal $60.
Cleveland: Feed $44.90, meal $67.90.
Denver: Feed $47.20, meal $70.20.
Ft. Worth: Feed $45.70, meal $68.70.
Indianapolis: Feed $42.20, meal $65.20.
Kansas City: Feed $37, meal $60.
Louisville: Feed $43.60, meal $66.60.
New Orleans: Feed $46.90, meal $69.90.
New York: Feed $48.10, meal $71.10.
Norfolk: Feed $47.50, meal $70.50.

CORN OIL MEAL

Cincinnati: Demand fair; trend steady; supply adequate; $43.

Louisville: Demand slow; trend easy; supply ample; $51.45.

COTTONSEED OIL MEAL

Cincinnati: Demand poor; trend steady; supply adequate; $60.

Ogden: Supply ample; 41% $70@72.

St. Louis: Demand slow; trend easy; supply adequate; solvent $58.50.

Portland: Demand slow; trend lower; supply ample; $72.

Ft. Worth: Demand slow; offerings sufficient; 41% old process $63, f.o.b. mills, Ft. Worth; carlots, solvent 2% fat added $57@58, delivered Ft. Worth; pellets $2 additional; hulls $30.

Chicago: Demand poor; trend lower; supply ample; Memphis basis, hydraulic $52.

Omaha: Demand slow; trend easy; supply ample; 41% solvent $59.70, delivered Omaha.

Los Angeles: Demand fair; trend slightly easier; supply moderate; $65.

Kansas City: Demand slow; trend easy; supply ample; 41% old process $52@52.50; solvent process $51@51.50, Memphis.

New Orleans: Demand slow; supply ample; trend steady; $65@65.50 bulk, $67.50@68 sacked.

Philadelphia: Demand slow; supply fair; $70.

Wichita: Demand good; supply fair; 41% old process $70, sacked.

Memphis: Demand poor; trend steady to lower; supply ample; prime 41% protein, old process $51.50; new process, 41% solvent $50.

San Francisco: Demand good; supply tight; 41% $69; 44% $72.50.

Boston: Demand quiet; supply ample; $70.

Louisville: Demand slow; trend steady; supply fair; new or old process $62.50.

Denver: Demand slow; trend slow; supply ample; $64.

Buffalo: Demand poor; trend steady to lower; supply adequate; $71, sacked, Boston.

Seattle: Demand good; trend easy; supply ample; 41% expeller $75, delivered truck lots.

CURACAO PHOSPHATE

New York: $48 sacked, $46 bulk, f.o.b. New Orleans, Jacksonville or Philadelphia.

D ACTIVATED ANIMAL STEROL (POWDERED)

Cincinnati: Demand fair; trend steady; supply ample; 1,500 ICU 11@12¢ lb.; 3,000 ICU 19¢ lb., warehouse.

Kansas City: Demand fair; trend steady; supply ample; 1,500 ICU 9⅝¢ lb.; 3,000 ICU 11¢ lb.

D ACTIVATED PLANT STEROL (POWDERED)

Chicago: Demand fair; supply ample; 4,000,000 U.S.P. units per lb., 15¢ lb. in ton lots, less than ton lots 17¢ lb.; 12,000,000 units per lb., 5 tons to a carload 25¢ lb., ton lots and less 30¢ lb.

DEFLUORINATED PHOSPHATE

Cincinnati: 18% phosphorus $81.02; 14% phosphorus $71.03, f.o.b. Cincinnati.

Butte, Mont.: Minimum phosphorus 18%, minimum calcium 32%, maximum calcium 36%, maximum fluorine .18%, $31 (or $4.50 per unit of P), f.o.b. Butte, 100 lb. multiwall bags; bulk $78; truck loads of less than 10 tons $10 more, bagged or bulk.

Houston: Minimum phosphorus 19%, minimum calcium 32%, maximum calcium 35%, maximum fluorine .19% $74.35 net ton, f.o.b. Houston, 100 lb. multiwall bags; $71.35, bulk.

Coronet, Fla.: Minimum phosphorus 18%, minimum calcium 31%, maximum calcium 34%, maximum fluorine .18%; guaranteed uniform analysis; carload $66.25, sacked, 100-lb. multiwall bags, bulk $63.25; truck load $67, sacked, in 100-lb. multiwall bags, bulk $64, f.o.b. Coronet, Fla.

Tupelo, Miss.: Minimum phosphorus 14%, minimum calcium 28%, maximum fluorine .14% $57.07, f.o.b. Tupelo in 100-lb. multiwall bags, $54.07 bulk.

Wales, Tenn.: Minimum phosphorus 18%, minimum calcium 33%, maximum 36%, maximum fluorine .18% $71.80 (or $3.99 per unit of P), f.o.b. Wales in 100 lb. multiwall bags, $3 less in bulk.

DICALCIUM PHOSPHATE

Trenton, Mich.: 18½% P $83, bulk, boxcar/hopper car; $86, bagged, in carloads or truck loads; $96, bagged, in less than carload lots; 21% P, $94.85, bulk, boxcar/hopper car; $97.64, bagged, in carloads or truck loads; $107.85, bagged, less than carload; all prices f.o.b. Trenton, freight equalized with nearest producing point.

Chicago: Bulk 18.5% phosphorus, carlots or trucks $83; 20,000 lb. or more $86 net ton in 100 lb. papers; less than 20,000 lb. $96, basis Chicago Heights, Ill., or Nashville, Tenn.; 21% phosphorus, carlots or trucks, bulk $94.85; 20,000 lb. or more, per net ton in 100 lb. papers, $97.65 and less than 20,000 lb., $107.85, basis Chicago Heights, Ill., or Nashville, Tenn.

Bonnie, Fla.: Minimum phosphorus 18½%, granular, $86 (or $4.65 unit of P), freight equalized from nearest producing point, carload basis; bulk carloads $3 less; in truck loads of less than 10 tons, $10 more. Western slope prices, for delivery at established railroad stations and by truck at regular feed mixing plants: California, Arizona, Nevada and Utah, $99.90; Washington, Oregon, Montana and Idaho, $107.15; bulk carloads $3 less; truck loads less than 10 tons, $10 more.

Columbia, Tenn.: Minimum phosphorus 18½%, minimum calcium 24% $86, f.o.b. Columbia, in 100 lb. multiwall bags; freight equalized with nearest producing point, carload basis; bulk $3 ton less.

Texas City, Texas: Minimum phosphorus 18.5%, minimum calcium 20%, maximum calcium 23%, maximum fluorine .12%; carload and truck load $80.50, sacked, in 100 lb. multiwall bags, bulk $77.50, f.o.b. Texas City.

Portland: Demand fair; trend steady;

supply ample; $90@102.50, sacked.
Cincinnati: 18¼% phosphorus $92.15, f.o.b. Cincinnati.
Denver: Demand good; trend strong; supply ample; $92.

DISTILLERS DRIED GRAINS

Cincinnati: Demand fair; trend steady; supply adequate; by truck $52.50, sacked.
San Francisco: Demand fair; supply ample; solubles $79, sacked.
Philadelphia: Demand slow; trend unsettled; supply light; $55.50.
Boston: Demand good; supply light; light $56, dark $58.
Buffalo: Demand fair; trend steady; supply adequate; $57, Boston.
Louisville: Demand and supply good; trend steady; bourbon grains: light $51, dark $53, solubles $73, all sacked.
Seattle: Demand fair; trend firm; supply limited; $69, delivered, truck lots, sacked.

DRIED BEET PULP

Ogden: Supply good; $41@46.
Portland: Demand good; trend steady; supply adequate; $51.10, sacked.
Milwaukee: Demand good; trend strong; supply limited; plain $60, molasses $61.50, both Chicago.
Los Angeles: Demand steady; trend unchanged; supply ample; $43.80@44.90.
San Francisco: Demand good; supply fair; $42.80.
New Orleans: Demand fair; trend steady; supply adequate; $54.50@55, papers.
Boston: Demand active; none available; temporarily withdrawn.
Buffalo: Demand fair; trend steady to higher; supply poor; $69, sacked, Boston.
Seattle: Demand good; trend firm; supply limited; $52, delivered carlots, sacked.
Denver: Demand fair; trend steady; supply short; $32.50, f.o.b. sugar plant.

DRIED BUTTERMILK

Milwaukee: Demand fair; trend limited; supply limited; $13 cwt.
Los Angeles: Demand fair; trend unchanged; supply adequate; 13¾¢ lb., sacked.
New Orleans: Demand fair; trend steady; supply ample; $13@14 cwt., sacked.
Ogden: Supply good; $17.25 cwt.
Chicago: Demand and supply fair; trend firm; medium acid $11.75@12 cwt.; sweet cream $11.75@12 cwt., both sacked.
San Francisco: Demand fair; supply ample; 12½¢ lb., sacked.
Boston: Demand good; supply short; 14¢ lb.
Buffalo: Demand fair; trend steady; supply limited; $12.65 cwt.
Louisville: Demand slow; trend steady; supply normal; $13@14 cwt., sacked.

DRIED CITRUS PULP

San Francisco: Demand and supply fair; meal $49, sacked.
Los Angeles: Demand fair; trend weaker; supply increased; orange pulp $38; lemon pulp $36.
New Orleans: Demand fair; trend easy; supply ample; $32.50@35, f.o.b. Florida.
Boston: Demand slow; supply ample; $54, sacked.
Buffalo: Demand and supply fair; trend steady; $37.50, sacked, f.o.b. Florida points.

DRIED SKIM MILK

Minneapolis: Market weakening; price down 25¢ from last week to $12.75 cwt.
Louisville: Demand slow; trend steady; supply ample; $13@14 cwt., sacked.
Buffalo: Demand fair; trend steady; supply ample; spray $12.75 cwt.
Portland: Demand fair; trend steady; supply light; 13¢ lb.
Los Angeles: Demand fair; trend unchanged; supply adequate; 15¢ lb., less than ton lots; 14¾¢ lb., ton lots; both sacked.
Chicago: Demand fair; trend steady; supply adequate; $11.75@12 cwt., sacked.
Milwaukee: Demand fair; trend limited; supply limited; $14.50 cwt.
Philadelphia: Demand slow; supply fair; $13 cwt.
New Orleans: Demand slow; trend unchanged; supply ample; $13.50@14 cwt., sacked.
San Francisco: Demand and supply fair; 14¼¢ lb., sacked.
Cincinnati: Demand fair; trend steady; supply adequate; 12@13¢ lb., sacked.
Ogden: Supply good; $15.15 cwt., drum.
Boston: Demand good; supply fair; 13½¢ lb.

DRIED WHEY

Minneapolis: Market steady; demand good; supply ample; $5.40@5.45 cwt.
Kansas City: Demand fair; trend steady; supply adequate; regular or partially delactosed $5.75 cwt., sacked.
Louisville: Demand slow; trend steady; supply light; $6@6.50 cwt., sacked.
Los Angeles: Demand fair; trend unchanged; supply adequate; $5.68 cwt., carloads; $5.98 cwt., l.c.l., both sacked.
Ogden: Supply good; $7 cwt., sacked.
Ft. Worth: Demand fair; supply adequate; carlots, standard $5.75, sacked, delivered Ft. Worth; ton lots $8, f.o.b. warehouse, Ft. Worth.
Portland: Demand fair; trend steady; supply light; $6.10 cwt., sacked.
Chicago: Demand quiet; trend steady; supply fair; $5.75@6 cwt., sacked.
San Francisco: Demand steady; supply good; $5.75 cwt., sacked.
Philadelphia: Demand slow; supply fair; $6.25 cwt.
Cincinnati: Demand fair; trend steady; supply adequate; $5.75 cwt., sacked.
New Orleans: Demand fair; trend easy; supply ample; $6@6.50 cwt.
Boston: Demand and supply steady; 5½¢ lb., f.o.b. shipping point.
Denver: Demand slow; trend slow; supply good; $136.
Seattle: Demand steady; trend easy; supply good; $6.25 cwt., ex-warehouse, l.c.l.

FEATHER MEAL (HYDROLYZED)

Ft. Worth: Demand fair; supply moderate; 85-87% protein $80, sacked, f.o.b. trucks north Texas plants.
Los Angeles: Demand slow; trend unchanged; supply ample; $1 a unit of protein, sacked.
Boston: Demand steady; supply tight; $80, sacked, f.o.b. shipping point.
Salisbury, Md.: Demand spotty; supply ample; $80, f.o.b.

FISH MEAL

Cincinnati: Demand fair; trend steady; supply adequate; $132.
Ogden: Supply normal; $1.70 a unit, f.o.b. Coast; 65% $115@117.
Milwaukee: Demand limited; trend weaker; supply good; 60% $125, sacked, Chicago.
Chicago: Demand quiet; trend easier; supply liberal; menhaden, East Coast $100, Gulf $100; menhaden scrap, East Coast $95, Gulf $90; Canadian herring meal, a unit of protein $1.65.
Minneapolis: Supply plentiful; demand slow but steady; market unchanged from last week; Gulf menhaden $117, sacked, truck lots, delivered Minneapolis; 70% herring $1.65 a unit of protein, f.o.b. West Coast; West Coast 60% blended $126@128, sacked, delivered Minneapolis.
Buffalo: Demand just fair; trend steady; supply ample; 60% protein menhaden $120 bulk, $135 sacked.
Louisville: Demand dull; trend steady; supply light; $145, nominal, sacked.
Los Angeles: Demand slow; trend steady; supply ample; local production, 60% protein $1.50@1.55 a unit, sacked.
Ft. Worth: Demand fair; supply sufficient; sacked: 65% protein Peruvian $105; 60% protein menhaden $107, delivered Ft. Worth.
Portland: Demand fair to good; trend unchanged; supply ample; $1.75 a unit of protein, sacked.
San Francisco: Demand slow; supply ample; $1.60 a unit of protein, sacked.
New Orleans: Demand dull; trend easy; supply ample; menhaden, 60% $100@102, sacked, f.o.b. Gulf; scrap $96@98, sacked, f.o.b. Gulf.
Omaha: Demand good; trend good; supply ample; 60% menhaden $120, f.o.b. Omaha.
Boston: Demand fair; supply plentiful; $103, sacked.
Denver: Demand good; trend strong; supply ample; $136.
Seattle: Demand fair; trend steady; supply good; $1.75 a unit protein, delivered truck lots, sacked (Canadian production).
New York: Demand fair; trend lower; supply good; 60% menhaden meal $105, sacked, f.o.b. shipping points.

HAY

Louisville: Demand slow; trend weak; supply heavy; all varieties. No. 1 hay $30@32, No. 2 hay $28@30; straw $20.
Portland: Demand dull; trend easy; supply adequate; No. 2 green $35@37, baled, delivered Portland and Seattle feeding areas.
Ft. Worth: Demand slow for alfalfa, practically nil for others; supply sufficient; carlots, baled, No. 1 alfalfa $46@48, No. 2 $44@46; No. 2 prairie, nominal $30@32; No. 2 Johnson grass, nominal $28@30, delivered Texas common points.
Los Angeles: Demand fair to good; trend steady; supply ample; U.S. No. 1 $36@37; U.S. No. 2 leafy $34.50@35.50; U.S. No. 2 green $35@36; U.S. No. 2 $33@34.
Cincinnati: Demand poor; trend steady; supply adequate; No. 1 timothy $30; No. 1 red clover $38; alfalfa, first cutting $42, second cutting $52; alfalfa and clover mixed $39; wheat or oat straw $32, f.o.b. Wisconsin.
Wichita: Demand heavy; supply very scarce; prairie $30@32; alfalfa $32@34, baled.
Ogden: Supply good; $25 in the barn.
Philadelphia: Demand slow; supply light; $24@25.
Boston: Demand and supply steady; No. 2 timothy $40@42.
Seattle: Demand good; trend easy; supply fair; U.S. No. 2 green alfalfa $36, delivered truck lots, baled.

HOMINY FEED

Cincinnati: Demand fair; trend lower; supply adequate; $44.50.
Memphis: Demand poor; trend steady; supply ample; white $43.70, yellow $43.70.
Milwaukee: Demand and supply fair; trend fair; $45 sacked, $40.50 bulk, both Chicago.
Kansas City: Demand slow; trend steady; supply adequate; white or yellow $34.50@35.
Buffalo: Demand fair; trend lower; supply fair to good; $50.50, sacked, Boston.
Louisville: Demand good; trend easy; supply light; $48.50, sacked.
Chicago: Demand fair; trend steady; supply ample; $42.
St. Louis: Demand slow; trend steady; supply adequate; yellow $40.
New Orleans: Demand fair; trend easy; supply ample; $50@51, sacked.
Boston: Demand slow; supply plentiful; $50.
Seattle: Demand fair; trend firm; supply good; $50, delivered carlots.

LINSEED OIL MEAL

Milwaukee: Demand and supply fair; trend lower; expeller $76, solvent $65.75, both Chicago.
Minneapolis: Slightly weaker market; solvent down $1@1.50 from last week to $54.50 nearby, $56@55.50 for last half of May and June; expeller $65.50.
Louisville: Demand slow; trend steady; supply light; old process $84, new process $74.50, both sacked.
Los Angeles: Demand fair; trend steady; supply limited; local production, 21% protein $78.
Portland: Demand dull; supply light but adequate; trend unchanged; $82.75.
Ft. Worth: Demand slow; supply sufficient; 34% protein solvent $71.50, rail.
Kansas City: Demand slow; trend steady to easy; supply adequate; solvent process $54.50@55; old process $65@65.50, Minneapolis.
Chicago: Demand slow; trend easier; supply adequate; Minneapolis basis: solvent $55, expeller $66.50.
San Francisco: Demand fair; supply ample; $73.
Omaha: Demand fair; trend steady; supply ample; 34% solvent $61.30; 32% old process $71.30, Omaha basis.
New Orleans: Demand slow; trend easy; supply ample; $74.50 bulk, $79@79.50 sacked.
Philadelphia: Demand slow; trend unsettled; supply fair; 34% $78.
Wichita: Demand fair; supply sufficient; 34% $78, sacked.
Cincinnati: Demand poor; trend steady; supply adequate; new process $55.50; old process $65.50, Minneapolis.
Boston: Demand spotty; supply irregular; $75.
Seattle: Demand fair; trend firm; supply limited; 31% protein (California) $93, delivered carloads, sacked.
Denver: Demand fair; trend steady; supply ample; $71.

LIVER & GLANDULAR MEAL

Omaha: Demand and trend fair; supply ample; 65% $175, sacked.

MALT SPROUTS

Milwaukee: Demand good; trend firm; supply limited; $32 bulk; $38 odd weights; $40.50 even weights.
Chicago: Demand and supply fair; trend steady to easier; $31@31.50.
New Orleans: Demand fair; trend easy; supply ample; $46.50@45, sacked.
Cincinnati: Demand fair; trend steady; supply adequate; No. 1 $35.
Boston: Demand and supply limited; $48, sacked.

MEAT AND BONE MEAL

St. Louis: Demand slow; trend weak; supply ample; $72.
Kansas City: Demand slow; trend easy; supply ample; 50% $72.50.
Louisville: Demand slow; trend steady; supply good; $80@85, sacked.
Buffalo: Demand just fair; trend easier; supply ample; 50% meat scraps $75 bulk, $80 sacked.
St. Paul: Demand slow; market a shade weaker than last week; $75@79.
Chicago: Demand quiet; trend steady; supply fair; 50% protein $82.50, 100 lb. sacks.
Ft. Worth: Demand fair; supply sufficient; meat and bone, 50% $77@78, f.o.b. Ft. Worth.
Los Angeles: Demand good; trend steady; supply limited; 50% protein $1.65 a unit.
Omaha: Demand fair; trend good; supply ample; $80.
New Orleans: Demand slow; trend easy; supply ample; $85@90, sacked.
Cincinnati: Demand better; supply fair; trend steady; 50% meat and bone scraps $73.50, Cincinnati.
Wichita: Demand good; supply sufficient; 50% $87.50, sacked, f.o.b. plant.
Boston: Demand fair; supply good; $1.25 a protein unit; converted 50% $75.
Seattle: Demand good; trend firm; supply limited; 50% protein $85, ex-warehouse, sacked.
New York: Demand fair; trend lower; supply good; 50% $72.50, bulk; 55% $80, bulk; New York.
Denver: Demand good; trend strong; supply fair; $75.

MILLFEED

Minneapolis: Mixed market, but generally production still too heavy for demand; middlings steady to $1 lower at $35, sacked; red dog up $1 from last week to $43, sacked; bran off $1@2 to $37, sacked.
Kansas City: Demand good on sacked, fair on bulk; trend strong; supply tight; sacked, bran $36@36.50, shorts $35.50@36; bulk, bran $32.50@29, shorts $30@30.50, middlings $28.50@29.
Wichita: Demand fair to good; supply insufficient; basis Kansas City: bran $33@33.50, shorts $33@33.50, sacked; bran down $2.25 and shorts $2, compared with the preceding week.
Ft. Worth: Demand good; offerings light; bran $38.50, burlaps $44; gray shorts $40.50, burlaps $44.50; bulk middlings $39, delivered Texas common points; $1@2 higher on bran, $1@1.50 higher on bulk shorts, 50¢@$1 higher on middlings compared with previous week.
Chicago: Moderate let-down in offerings; moderately improved demand; advance of $2@2.50 on both bran and middlings; no price change for red dog; per ton, carlots, bulk: standard bran $33.50, standard midds. $34.50 and red dog $41.50.
St. Louis: Sacked, bran $40.50, shorts $41; bulk, bran $33.50, middlings $34.
Cincinnati: Demand fair; trend steady; supply adequate; bran and middlings $39@40.
Omaha: Demand fair; trend steady; supply ample; sacked bran $33.50; sacked gray shorts $33.50; bulk, standard midds. $29; all Omaha basis.
Boston: Demand poor; supply plentiful; bran $41.50, middlings $43.50.
Buffalo: Brief buying flurry May 4 eliminated bids and dried up supplies; inventories aren't as comfortable as they were and consumers can't remain away from the market as long as they did earlier; sacked differential on bran and middlings steady at $7.50 and red dog $4.50; bulk and sacked bran held unchanged; bulk and sacked middlings were unchanged to 50¢ higher, and red dog held steady; quotations May 4: bulk bran $33@35, sacked $40@42; bulk middlings $35@37, sacked $42@44; bulk red dog $43@44.50, sacked $47.50@48.50.
Philadelphia: Demand and supply fair; trend unsettled; bran $46, standard midds. $45.50, red dog $50.
New Orleans: Demand good; trend easy; supply ample; sacked, bran $44.50@45.25, shorts $44.50@45.25; bulk, bran $38.50@39, shorts $39.50@40.25, middlings $39@39.75.
Memphis: Demand poor to fair; trend steady; supply ample; wheat bran $34.70; gray shorts $35.70; standard midds. $34.70.
Louisville: Demand dull; trend weak; supply good; bran $45.60, mixed feed $46.35, shorts $47.60, all sacked.
Seattle: Demand fair; trend steady; supply limited; $42, delivered common transit points, carlots.
Portland: Demand fair; supply a little more liberal; trend unchanged to lower; $41.
Ogden: Supply good; to Utah and Idaho: red bran and mill run $38, middlings $43; to Denver: red bran and mill run $45, middlings $50; to California: red bran and mill run $45.50, middlings $50.50, f.o.b. San Francisco and Los Angeles.
Denver: Demand poor; trend steady to weak; supply good; shorts $41.25, bran $40.75, mill run $41.
Los Angeles: Demand slow; trend easier; supply increased; standard mill run $46@47; red bran $47.50@48.50.
San Francisco: Demand slow; supply ample; millfeed $47.75; red bran $54.

MINERAL FEED

Wichita: Demand heavy; supply adequate; all-purpose with iodine, 50 lb. blocks $97.50, 100 lb. bags $92.50, f.o.b. plant.
Portland: Demand steady; supply ample; trend unchanged; $44@45, sacked.
Ft. Worth: Demand fair; supply adequate; all-purpose granules $90, block $97; mineral phosphorus 6% granules $106, block $113; cattle-sheep mineral 7% phosphorus granules $100, block $107; hog mineral phosphorus 3½% granules $87, phosphorus 2% $77 (all in 50-lb. paper bags).
Sioux City: 50 lb. mineral blocks 8.2% phosphorus $92; 7.5% phenothiazine sheep mineral blocks $4 each.
San Francisco: Demand steady; supply good; all-purpose with iodine $70, sacked.
Ogden: Supply ample; $113 in 50 lb. blocks; $103, granular, 50 lb. bags.
Seattle: Demand fair; trend steady; supply good; mixer-mineral $48, ex-warehouse, sacked; all-purpose mineral $95, ex-warehouse, sacked.
Denver: Demand good; trend strong; supply ample; $90.

MOLASSES

Seattle: Demand fair; trend easy; supply good; $19.75, f.o.b. Seattle, tank truck lots.
New York: Demand fair; trend steady; supply good; 14¢ gal. Albany; 13½¢ Baltimore and New York; $35, f.o.b. Buffalo.
Denver: Demand fair; trend strong; supply good; $34.50.
Cincinnati: Demand fair; trend steady; supply adequate; 5½¢ gal., New Orleans.
Boston: Demand steady; supply ample; 14¢ gal., in tank cars.
Los Angeles: Demand good; trend steady; supply ample; $19.50, f.o.b. tank cars; $19.75, f.o.b. tank trucks.
Memphis: Demand poor; trend steady; supply ample; blackstrap 5¼@5½¢ gal., tank car, f.o.b. New Orleans, and $22 ton, delivered Memphis, truck.
Kansas City: Demand slow; trend steady; supply ample; blackstrap 5¼¢ gal., f.o.b. tank car, New Orleans.
Louisville: Demand slow; trend steady; supply normal; 5½¢ gal., tank car lots, f.o.b. Gulf ports.
Buffalo: Demand fair; trend steady; supply good; 14¢ gal., f.o.b. Albany.
Minneapolis: Demand slow; supply ample; $27.50, tank truck, delivered.
Ft. Worth: Demand slow; supply sufficient; blackstrap 5½¢ gal., f.o.b. Houston; delivered Ft. Worth truck $32.95, seller's market price on date of shipment.
San Francisco: Demand and supply good; $19.75, f.o.b. cars Richmond, Cal.
St. Louis: Demand slow; trend steady; supply ample; 5¼¢ gal., tank cars, New Orleans.
Milwaukee: Demand fair; supply ample; trend unchanged; blackstrap 5¾¢ gal., f.o.b. New Orleans.
New Orleans: Demand fair; trend steady; supply good; 5¼@5¢ gal., tank cars and trucks; 600-lb. customers' drums $6.90.

NIACIN

New York: 50% $1@1.20 lb.

OAT PRODUCTS

Seattle: Demand good; trend firm; supply fair; 36 lb. or better $59, delivered, truck lots.
Louisville: Demand slow; trend steady; supply ample; reground $35.80; rolled oats $84.80; feeding oatmeal $80.30; crimped white oats $67.80; pulverized white oats $53.80; all sacked.
Minneapolis: No change from last week; sacked—feeding rolled $81, feeding oatmeal $68, pulverized $47, crimped $62.50, reground oat feed $27.
Philadelphia: Pulverized white demand slow, supply fair $52; domestic demand slow, supply light $32.30; Canadian oat feed demand slow, supply very light $36.50, sacked, nominal.
Chicago: Demand fair; trend irregular; reground oat feed $33; No. 1 fine ground feeding oatmeal $74; feeding rolled oats $79.
Los Angeles: Demand fair; supply limited; trend unchanged; local production, pulverized, $69, sacked.
Portland: Demand fair; trend steady; supply fairly light; whole white oats $58@58.50.
Ft. Worth: Demand slow; supply sufficient; oat millfeed $48.70, reground $34.70, sacked, new jutes.
Cincinnati: Demand poor; trend steady; supply adequate; pulverized white oats $49@54.
Memphis: Demand poor; trend lower; supply ample; 2½% protein, reground oat feed $32.75.
Boston: Demand good; supply spotty; white pulverized, sacked $58.50; reground oat feed $38, nominal.

OYSTER SHELL

Louisville: Demand good; trend steady; supply normal; in paper bags, 25-lb. $26.95, 50-lb. $23.70, 80-lb. $23.45.
Boston: Demand and supply steady; in paper $26.05.
Seattle: Demand and trend steady; supply good; eastern $26, delivered, carlots, sacked.
San Francisco: Demand fair; supply am-

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pie; local $15, eastern $26, sacked.
Portland: Demand fair; trend steady; supply ample; western $27, eastern $35, shell flour $23, all sacked.
Los Angeles: Demand fair; trend unchanged; supply ample; $15.40.
Cincinnati: Demand fair; trend steady; supply adequate; 80 lb. bags $23.85; 50 lb. bags $24.10, 25 lb. bags $26.35.
New Orleans: Demand and supply good; trend steady; $25@26, papers.

PEANUT OIL MEAL

Milwaukee: Demand and supply fair; trend unchanged; 26% $45 sacked, $41 bulk, both Chicago.

PEAT MOSS

Portland: Demand fair; trend steady; supply ample; $3@3.15, 5.6 cu. ft. bale.
San Francisco: Demand and supply fair; $3.65 bale.

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Chicago: Demand and supply fair; trend firm; standard 7¼ cu. ft. bale $3.80.
Seattle: Demand and supply good; trend firm; $2.85 bale, delivered truck lots.
Los Angeles: Demand good; trend steady; supply ample; Canadian 5.6 cu. ft. bales $3.65.
Philadelphia: Demand and supply fair; $2.99 bale, f.o.b. pier.
Cincinnati: Demand and supply good; truck loads $3.45, baled, f.o.b. Cincinnati.
Boston: Demand and supply seasonally steady; $3.15 bale in carlots.

POTASSIUM IODIDE (U.S.P.)

Chittenango, N.Y.: Demand good; trend firm; supply ample; standard blends, 90% K.I., 10% stearate or carbonate mixture: 100 lb. drums $1.32 lb.; 200 lb. and up $1.30 lb., all delivered.
Cincinnati: Demand good; trend steady; 90% KI in calcium stearate or carbonate mixtures: 250 lb. drums $1.35, 200 lb. in 100 lb. drums $1.35; 100 lb. drums $1.38; 25 lb. drums $1.41, f.o.b. Cincinnati.

POULTRY BY-PRODUCTS

Salisbury, Md.: Demand good; supply adequate; meal $56.
Los Angeles: Demand good; trend firm; supply tight; $1.45 a unit of protein, sacked.
Ft. Worth: Demand fair; supply moderate; 55% protein $55, sacked, f.o.b. north Texas plants.
Boston: Demand fair; supply tight; $71, f.o.b. shipping point.

RIBOFLAVIN

New York: $40 kilo in 4 and 16 gm./lb. mixtures.
Cincinnati: Trend steady; feed grade (in feed supplements): 4¢ gram in less than ton lots in 3.36 to 16 gm./lb. mixtures; 3¢ in ton lots or more, freight prepaid or paid to destination.

RICE BY-PRODUCTS

Los Angeles: Demand slow; trend unchanged; supply adequate; California production, high fat content, bran $52, sacked.
Ft. Worth: Demand fair; supply limited; rice bran $32@33, f.o.b. south Texas rice mills; hulls $3.50, sacked, f.o.b. mills.
San Francisco: Demand good; supply ample; bran $45, polished $49, both sacked.

SCREENINGS

Ft. Worth: Demand fair; supply limited; ground mixed grain $27@28, nominal.
Buffalo: Demand and supply fair; trend steady to lower; ground, sacked $37.50, New York, lake and rail; unground, bulk $32, New York.
Minneapolis: Canadian spot $24, May-June delivery $19, ex-boat; domestic supplies tight, demand good, prices at high end of ranges: lights $13@23, mediums $24@23, heavies $24@43; flax screenings down about $5 from last week to $40.
Chicago: Demand poor; trend sharply lower on Canadian; supply light; ground grain $38@39, nominal; Canadian $26.90.
Cincinnati: Demand fair; trend steady; supply adequate; unground grain screenings $25.50.

SOFT PHOSPHATE WITH COLLOIDAL CLAY
(Sacked)

Atlanta: $20.40@20.67.
Buffalo: $25.31@25.45.
Chicago: $24.77@24.90.
Cincinnati: $23.47@23.60.
Des Moines: $25.23@25.35.
Kansas City: $24.88@25.
Memphis: $22.20@22.47.
Minneapolis: $25.92@26.06.
Philadelphia: $24.32@24.95.
St. Louis: $24.14@24.27.

SORGHUMS

Seattle: Demand and supply good; trend easy; milo $46, delivered carlots.
Los Angeles: Demand steady; trend weaker; supply ample; milo $2.17½ cwt.
Ft. Worth: Demand fair; offerings light on decline; No. 2 yellow milo $2.04@2.06 cwt., delivered Texas common points.
Ogden: Supply ample; milo $43@43.

SOYBEAN OIL MEAL

Seattle: Demand good; trend firm; supply ample; $76, delivered carlots.
Denver: Demand fair; trend slow; supply good; 44% $76.
Louisville: Demand slow; trend steady; supply normal; $67.70, sacked.
Minneapolis: Slightly improved market, but higher position, about $1 above last week, not very solid; demand slow, supply ample, 44% $49, Decatur.

Chicago: Offerings more than ample for breadth of demand; easiness in May meal to extend again; unrestricted billing. Delivered Decatur basis: 44% protein $55 and eastern trunk line $51@51.50; 50% protein $60, and eastern trunk line $55@55.50.
Memphis: Demand poor; trend steady; supply ample; prime 44% solvent $57, f.o.b. Memphis.
San Francisco: Demand fair; supply ample; $76.40.
Portland: Demand good; trend light; supply tighter; $75.90@76.40.
Milwaukee: Demand and supply fair; trend lower; $53, Decatur.
Philadelphia: Demand and supply fair; 44% $52, Decatur.
Omaha: Demand slow; trend steady; supply ample; 44% $56.60, delivered Omaha.
Cincinnati: Demand fair; trend lower; supply adequate; $54.50, Decatur.
Wichita: Demand slow; supply ample; 44% $66, 50% $72, sacked; 44% $62, 50% $69, bulk, f.o.b. Wichita.
Ogden: Supply ample; 44% $78@79; 50% $83@84.
Kansas City: Demand poor; trend weaker; spot supplies pressing; solvent process $56.50@61, Decatur.
Ft. Worth: Demand slow; supply sufficient; 44% $62.50 immediate-May, $65.60 June-August; 50% $71.60 May, $72.60 June, $73 July-August.
Los Angeles: Demand slow; trend easier; supply somewhat larger; $74.40@75.40.
Boston: Demand fair; supply adequate; 44% $52, 50% $58, both f.o.b. Decatur.
St. Louis: Demand slow; trend steady; supply ample; 44% $57.
New Orleans: Demand slow; trend easy; supply ample; $67@68, sacked.

TANKAGE

Chicago: Demand fair; trend steady; supply ample; 60% protein, 100 lb. sacks $55.
Omaha: Demand fair; trend good; supply ample; $50.
Kansas City: Demand slow; trend easy; supply ample; 60% digester $72.50.
Louisville: Demand slow; trend steady; supply good; 60% $55@90, sacked.
St. Paul: Demand slow; market a shade weaker than last week; $74@75.
St. Louis: Demand slow; trend weak; supply ample; $73.
Cincinnati: Demand better; trend steady; supply fair; 60% digester $77.50, Cincinnati.
Wichita: Demand good; supply sufficient; 60% $87.50, sacked, f.o.b. plant.
Ft. Worth: Demand slow; supply sufficient; 60% digester $84, sacked, Ft. Worth.
New Orleans: Demand dull; trend steady; supply good; 60% $87@89.50 bulk, $92@94.50 sacked.

VEGETABLE AND ANIMAL FAT (HYDROLYZED)

Ft. Worth: Demand good; supply limited; 5½¢ lb., f.o.b. north Texas area.

VITAMIN E FEED SUPPLEMENT

Cincinnati: Demand good; trend steady; any quantity in 100-lb. drums $1.50; in 25-lb. drums $1.55. Freight allowed to destination.

WHEAT GERM MEAL

Buffalo: Demand fair to good; trend lower; supply fair; commercial grade $60, sacked, f.o.b. Buffalo.
Minneapolis: Demand fair; supply tight; price down $1 from last week; $55, jutes.
New Orleans: Demand fair; trend easy; supply ample; $64@66, cottons.

Bag Firm Promotions

NEW YORK — The promotion of two men to newly-created positions in the multiwall bag division of West Virginia Pulp & Paper Co. has been announced by Victor S. Luke, division manager.

Gilbert H. Dehnkamp has been named quality control director, and Harold N. Rogers has been appointed industrial engineer for the division. They will be headquartered in New Orleans.

COURT

(Continued from page 1)

B. K. Smoot, Western Star Mill Co. and Kansas Soya Products Co., Inc.

New Trial Denied

The court's decision in the case was reached several weeks ago, but did not become effective until April 27, when the defendant's motion for a new trial was denied. Quincy Ayres, executive officer of the foundation, said that the court entered complete findings and overruled all of the defendants' objections.

Dr. Wise Burroughs, professor of animal husbandry at Iowa State University, developed the method of using stilbestrol in minute quantities in growing and fattening cattle. Since its commercial introduction in 1954 by Eli Lilly & Co., Indianapolis, Ind., the method has gone into widespread use. Eli Lilly is the first and principal licensee under the Burroughs patent. Its license was granted by the Iowa State College Research Foundation, owner of the patent.

Quote from Judgment

The court stated in its judgment: "Defendants the Western Star Mill Co., a Kansas corporation; Kansas Soya Products Co., Inc., a Kansas corporation, and John J. Vanier are liable and answerable to plaintiff herein as infringers of Claims 1, 2, 6, 8 and 9 of the Burroughs patent No. 2,751,303, and said defendants, their officers, agents, servants and employees, and all persons, companies and corporations in active concert or participation with them, each and all of them, are hereby perpetually and permanently enjoined and restrained from infringement, active inducement of infringement and contributory infringement of the method defined and patented in said Claims 1, 2, 6, 8 and 9 of said U.S. Letters Patent No. 2,751,303."

Albers to Give Away Photo Contest Prizes

LOS ANGELES — Albers Milling Co. will be giving away six heifers, 50 transistor radios and 1,250 other prizes in a "Fun on the Farm" photo contest it held recently.

Prizes will be awarded to pictures based on originality, suitability and aptness of subject matter based upon the "Fun on the Farm" theme. Photos of animals feeding are being preferred in the judging. Winners will be announced June 30.

Along with the snapshot, entrants sent in the "quality controlled" seal from any Albers Calf Manna, Suckle or Sho-Glo bag.

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RATIOS

(Continued from page 8)

meat animals. At $15.50 in mid-April, hog prices averaged the same as a year earlier and were the highest of any mid-month since then. Lamb prices were up from a year earlier, but beef cattle, calf and sheep prices were down.

The hog-corn ratio April 15 was 14.8, compared with 15.1 a month before and 13.7 a year before.

DAIRY PRODUCTS—A seasonal decline in wholesale milk prices received by farmers was a major force behind the 3% drop in this index during the month ended April 15.

According to USDA, the milk-feed ratio of 1.35 for mid-April was just barely ahead of a year earlier and slightly under the ratio of a month earlier.

Little change was noted in the butterfat-feed ratio. On April 15 of this year it was 24.1, less than the March 15 ratio of 24.5 and the April, 1959, ratio of 24.6.

PURINA

(Continued from page 1)

of this fiscal year will equal the all-time high of last year."

Mr. Danforth reported that earnings per share for the first six months of the current fiscal year were $1.44—14¢ per share less than was earned during the comparable period of the year before.

Purina's consolidated earnings statement for its U.S. and Canadian companies shows that net sales during the six-month period ended March 31 of this year amounted to $259,498,704, about 2% under the 1959 figure for the same months of $264,058,643.

Comparable earnings before taxes were: 1960—$19,823,468, and 1959—$21,986,972. Net earnings were down a little over 9%—from $10,256,972 to $9,348,468.

INGREDIENTS

(Continued from page 8)

to have improved slightly, but some observers said this firmness was not holding, even though production had been curtailed somewhat.

Demand for millfeeds has been fairly steady but lighter than at this time in past years. The Kansas City market reported that inventories of feed manufacturers were reported low and some felt they could be replenished at present price levels.

The Millers National Federation issued a bulletin which stated that recent declines in millfeed prices are not greatly out of line with what could be expected.

"Almost invariably a decline in millfeed prices takes place around the end of winter or in the spring months, infrequently being delayed as late as June," said the bulletin. "Sometimes these declines are gentle, sometimes (as this year) they are swift and steep, but regardless of their character they almost invariably come along."

Animal protein feeds were offered this week in excess of present demand. USDA said prices at main distributing points averaged $2.50 ton lower for meat meal and $3.40 ton for tankage.

SWIFT

(Continued from page 1)

able for grinding, batching, mixing, pelleting, bagging and loading feeds," Mr. Chapin said. "Production capacity at the mill will be 12 tons an hour. A full line of formula feeds will be manufactured to serve Swift & Co. dealers in Illinois, Wisconsin, Indiana and Michigan."

Swift has awarded the contract for building the mill to the equipment division of Archer-Daniels-Midland Co. The plant is to be completed by the end of this year.

About 20 people are expected to be employed initially at the new office and plant.

Mr. Chapin expressed optimism in the economic future of Mendota and the surrounding areas, pointing out that Swift's newest meat packing plant is to be constructed at Rochelle, only about 30 miles from Mendota.

"Mendota is a hub of an important agricultural community," Mr. Chapin said, "and its future in agriculture and industry looks promising. It is with optimism that Swift, one of the country's largest producers of animal protein and soybean meal, looks forward to becoming a business citizen of the area."

TECHNIQUES

(Continued from page 1)

the final word in the matter. There is clear evidence that USDA officials are entirely flexible and intend to bring in scientific testimony to either support their operating methods or to modify them to the extent that expert testimony would indicate.

Consequently, to implement this attitude, USDA will meet with leading pathologists of the poultry industry here in about 10 days to review present inspection techniques, to ask the advice of the scientists in modifying those techniques and also to discuss the diversion of cut-up parts of birds rejected because of lesions indicating a previous disease condition.

FEED ACTIVITY

(Continued from page 1)

an expansion of livestock feeding and feed milling will continue, regardless of any effect that the new storage rates might have.

Here are some of the views on the feed industry situation as it might be affected by the new government storage rates and terms:

Northwest: "I doubt whether lower storage rates will alter feed activity greatly. Those with a good feed potential are already in it and may become more aggressive, but if there is not a really good potential, they probably will stay out."

Southwest: "Many people will have to become more aggressive in feed and will try to do a more efficient job in both storage and feed. Developments in grain sorghum feeding will have a great effect, too."

Pacific Northwest: "The feed business already is highly competitive, and some people are getting out of it rather than into it. I see no marked trend of grain firms getting into or expanding in feed."

Corn Belt: "It's just logical that country elevator people who also are in the feed business will have to become more aggressive in feed. Grain banking has been growing so rapidly that it hasn't needed any new stimulus, but this may give it some more."

Midwest Mill Builder: "There has not been a universal turning to the feed business, but we have planned a substantial number of custom-type plants for country elevators and other storage operators who have been looking for a means of maintaining activity in the expectation that storing grain might become unprofitable." Another builder: "We have been swamped with requests for mill plans from storage interests."

Great Plains: "A number of firms anticipated the reductions in storage income and have either built or planned feed plants to offset a drop in income."

Midwest: "I think we will see an over-expansion in the feed industry far worse than that which occurred in the flour milling industry in the days when there was a mill at every crossroads."

Northwest: "People who have been in storage as well as feed have used their profits on government grain storage to offset unreasonable price cutting and credit extension in feed. Now they will have to get better margins on feed and farm supplies and conduct their operations more reasonably."

Midwest: "Some persons in the grain business no doubt are looking at feed expansion possibilities, but with profits lower in many cases and capital expenditures already large, they will look mighty close before they invest in new feed milling facilities. The potential would have to be very good before they would get into this competitive business more deeply."

Midwest Machinery Man: "There definitely is more interest in grain processing and molasses mixing, etc., as well as more complete feed mixing operations, as a result of prospects for less return to elevators from storage."

Midwest: "Cooperatives have been among the most active in planning and building new mills, at least partly because they wished to offset any drop in income that might occur with a cut in storage rates or occupancy. Most of these new mills are primarily grinding and mixing units, but a number of them are completely equipped, right down to pellet mills and bulk facilities."

As for grain storage itself, it generally was felt that most persons in this field would have no alternative but to continue to stay in the government storage program.

Some also noted that provisions in the new agreement regarding certain grade factors and responsibility on FDA requirements make the new situation more hazardous or difficult than the rate reduction itself.

To Stimulate Milling

While, as indicated by the above remarks, opinions on the effects of reduced rates on the feed industry vary, the views add up to a general indication that the storage situation, along with grain production changes, will stimulate feed milling activity on an over-all basis.

One industry spokesman in the Midwest put it this way: "It is common sense that with rates lower and possible changes in farm programs coming, grain men will have to re-evaluate their other departments. In many cases, they are likely to become more aggressive in feed and try to do a more efficient job all through their operations. The grain bank is booming already, but the new developments may make it more attractive to mills that have used storage space for government grain."

A midwestern feed manufacturer said that at the local level, the situation generally would be one of emphasis on doing a better job in the feed business. Grain people who have been storing government grain will continue to do so, he said, but they will have to try to do better in getting profits out of their feed operations.

A mill builder pointed to interest of grain companies in the Missouri-Kansas area among storage operators who have not been in the feed business before, except perhaps as dealers. "When they look for other possibilities," he said, "the first thing they think of is feed."

Discount Effect

On the other hand, several grain firms in this general area, already in the feed business, discount the effect that the rate reduction will have. They say there already is too much building being done in the feed industry.

A trade spokesman in the Pacific Northwest expressed the view that in that area, the feed business is so competitive that grain firms not now in it will not move into feed milling. "If anything," he said, "more people are getting out of feed."

As for the government grain storage, he said most operators will sign the new agreement. They will be forced to do so. They can't serve agriculture in the area without being part of the program, he said.

A southwestern spokesman, commenting on storage itself, said everybody will do everything possible to improve efficiency and cut costs. This will mean more use of labor saving machinery. Some high-cost elevators may drop out of the government program, but most have no alternative but to stay. They cannot merchandise grain because there is not enough free grain to handle.

Meanwhile, he said, some operators may have disappointing experiences with government grain, and next year they may turn more attention to feed.

Grain Production Changes

At the same time, a major factor in Texas and other sections is the predicted long-term trend toward expansion of livestock feeding operations, making use of the greater amount of grain sorghums now available. The southwestern spokesman said he definitely sees his area becoming competitive with the Corn Belt in feeding. And the storage situation may increase interest of grain and feed men in this development.

In the Northwest, including the Dakotas, Montana and part of Minnesota, there is a similar development. In this case barley is involved. Some persons in the trade say that the cutback in wheat and expansion in barley is being reflected very markedly now in increased interest in livestock feeding. They say that the reduced storage rates may increase interest in this to some extent among grain and feed interests, but they feel that this development would continue and grow anyway. One person mentioned that it is another case of alterations of former agricultural patterns because of government farm programs.

For one thing, there is said to be a great deal of interest in feeding of all-concentrate rations to cattle—using rolled barley and supplement. This is expected to increase among dryland farmers who can raise barley but not hay. They will feed cattle formerly shipped into other sections for finishing.

One person in this area looks for more emphasis on merchandising of feed and other farm supplies to offset reductions in storage income. However, he noted that the credit problem tends to deter developments in this field. At the same time, he observed that some people will have to do a "more sensible" job in pricing their products; they won't be able to count on storage profits to offset low returns in other departments.

Another person said that the capital requirements necessary for marked expansion would put a damper on any ideas of more activity in feed. "Profit and loss statements haven't been so good in many cases," he said, "and people will need to have a mighty good potential before they spend money for more milling facilities. They would like to have more milling facilities, but they will look at the tough competitive situation. Credit and price cutting problems are real stumbling blocks."

New Alfalfa Meal Rail Rates Published

KANSAS CITY—New reduced rail rates on alfalfa meal movement between points in Colorado, Iowa, Illinois, Kansas, northern Missouri, Minnesota and South Dakota have been published to become effective May 22, according to Ray Cox, traffic consultant to the American Dehydrators Assn.

He said the new rates from WTL territory to southwestern territory had not yet been published.

CHECKS WEIGHT — Bryce Rhodes (left) checks the weight of a bag on the first shipment of defluorinated phosphate for animal feeds. Mr. Rhodes is president of the firm.

Montana Phosphate Plant in Production

BUTTE, MONT.—Rocky Mountain Phosphates, Inc., has announced that it is now in near capacity production.

The firm's first order for defluorinated phosphate for animal feeds was filled in April, according to Bryce Rhodes, president. The initial 12 tons of the finished product went to the Montana Flour Mills Co. feed plant at Bozeman. The feed phosphate plant primarily will serve western feed manufacturers.

The plant formerly was used for roasting of manganese ore. "Its facilities are ideal for the manufacture of defluorinated phosphate," said Benjamin G. Sanders, vice president.

USDA STUDY

(Continued from page 7)

dised and the number and size of activities in the business in addition to the feed department.

Policies of the company help determine costs of selling, advertising and research. And transportation costs depend on the distance which the feeds must be hauled to place them on the farms.

This case study booklet includes analyses of cost of ingredients and causes of variation in ingredient costs, ingredient procurement costs and variations, manufacturing, storing and handling costs for both feed manufacturers and retailers, overhead costs and reasons for variations and selling costs for manufacturers and retailers.

In addition, there are studies of transportation costs, research, experimental and formula development costs and total costs of manufacturing and distributing feed. In each area of study, there are budgeted costs for the four types of operations being compared.

The booklet was issued by the marketing economics research division of the USDA. "This phase," said USDA, "is one part of a broad program to increase marketing efficiency and thus increase the price that farmers receive for feed ingredients, and to reduce the price to the farmer for purchased formula feeds."

NEW CONTROLS

(Continued from page 6)

USDA recognizes that ice and water chilling of poultry conserves the wholesomeness and quality of the product, but in the public interest, every precaution is being taken to prevent unnecessary water absorption which may occur during the washing and chilling processes, officials said.

July 1 Enactment

USDA plans to enact on July 1 a moisture control regulation which will be based on a 6% maximum in any poultry weighing more than 8 lb. (including all turkeys except Beltsville). Added moisture in birds weighing less than 8 lb. will be set at 8%.

Comparisons to obtain maximum water retention will be made between the pre-wash weight and after chilling and the weight after the freezing process.

Between now and July 1 plants will operate on the maximum moisture obtained under a 24-hour controlled chill tank test. The percentage obtained in the 24-hour controlled test will apply on all poultry if it happens to be more than 6% as ascertained through the controlled test. Because of objections raised, department officials feel it will take two more months to develop figures that are practical to the industry.

The problem of water retention is due to a combination of factors, first of which is the severe cutting of the flanks of birds, a condition which it is expected USDA field teams can eliminate through instruction at processors' plants.

USDA emphasizes that the water retention control plans will not upset use of present machinery which officials believe can be adjusted to meet the retention limits USDA plans to impose.

Kansas Feed Group Plans Four Meetings

HUTCHINSON, KANSAS — Four district meetings of the Kansas Grain & Feed Dealers Assn. have been scheduled as follows: Atchison, May 16; Iola, May 18; Colby, June 4, and Beloit, June 11.

The Atchison meeting will be held at the Bellevue Country Club with registration starting at 5:30 p.m. The golf course will be available, and foursomes will be formed between 2 and 3 p.m. The meeting at Iola will start at 3 p.m. at the Kelley Hotel; registration for the Colby meeting will begin at 4 p.m. at the Cooper Hotel, and registration for the Beloit meeting will begin at 4 p.m. at the Porter Hotel.

R. P. Rodemyer Resigns

KANSAS CITY—Robert P. Rodemyer has resigned his position with Butler Manufacturing Co., effective June 1, 1960. He has been with Butler for eight years, the last five years as product sales manager for bolted tanks, working on the design and marketing of both the round bolted steel tanks and square tanks. Mr. Rodemyer's future plans are undecided.

TABLE 1. Cost Per Ton for Specified Factors of Feed Production and Distribution Expressed as a Percentage of Average Cost for Each Factor, for 4 Types of Organization*

Type of organization	Ingredients	Procurement	Production	Research	Selling	Overhead	Transportation	All factors
				Per cent				
Premix	102	13	138	60	59	79	69	101
Concentrate	98	93	111	110	81	103	110	100
Complete-feed	99	152	80	280	117	134	151	102
Retail-manufacturer	101	152	71	30	144	85	70	97
Average, 4 systems	100	100	100	100	100	100	100	100
				Dollars				
Average, 4 systems	63.96	0.23	13.06	.50	5.77	5.91	3.28	91.81

*For poultry mash at 40,000 tons of output per year.

EGG PROMOTION CAMPAIGN—The New Jersey Poultry Products Council, in cooperation with Hess & Clark, Ashland, Ohio, has launched a marketing-merchandising month-long campaign aimed at increasing consumption of eggs. In the picture are (left to right): Russell H. Eshelman, vice president of marketing, Hess & Clark; Regina Thomas, Trenton Junior College coed who served as "Miss Golden Goodness," and Phillip Alampi, New Jersey Secretary of Agriculture, all of whom attended the kickoff luncheon in Trenton saluting "Golden Goodness of New Jersey Fresh Eggs" month. Some 140 other people connected with the New Jersey poultry industry also attended. Among the activities connected with the May campaign are: Visits of the Farmobile, the department of agriculture's traveling exhibit, to four areas; distribution of 250,000 Golden Goodness folders; 3,000 posters in food stores; posters on more than 100 feed trucks; 15 service clubs featuring the Golden Goodness theme; 30,000 placemats made available to hotels, restaurants and diners; four billboards purchased by Hess and Clark to promote the campaign; increased advertising by the council and Hess & Clark, and radio and TV coverage of special promotion events.

Spring Wheat Crop Estimate Raised

CHICAGO—C. M. Galvin's crop estimate on winter wheat for 1960 has been set at 994,650,000 bu. — 17,713,000 bu. over the April 1 estimate by the U.S. Crop Reporting Board.

This is 72 million bushels more than was grown in 1959, and 161 million bushels above the 10-year (1949-58) average.

While Mr. Galvin's determination on acreage abandonment is not the smallest on record, at 6.2%, it is one full percentage point under last year's, and less than half as large as the 10-year average of 14%. This, he says, leaves an acreage of 41,595,000 for harvest. The latter is slightly more than a million acres greater than was brought to harvest in 1959, but around 1.25 million acres below the 10-year average.

To Speak in Rome

MUSCATINE, IOWA—Dr. Austin Hanson, technical director of Grain Processing Corp., leaves May 7 for Rome, Italy, where he will appear on a panel discussion at the International Fermentation Symposium May 9-12.

The symposium is co-sponsored by the fermentation division of the American Chemical Society and the Public Health Institute of Italy. Following the symposium, Dr. Hanson will visit fermentation installations and colleges in Germany and England, studying various fermentation processes in those two countries.

Dr. Salsbury's Holds Arkansas Meeting

FAYETTEVILLE, ARK.—Dr. Salsbury's Laboratories, Charles City, Iowa, was host recently to a Poultry Disease Symposium held in Fayetteville. About 200 poultry growers, sales and servicemen, hatcherymen, college researchers, feedmen and others of the poultry industry attended the meeting.

Speakers from Dr. Salsbury's discussed various diseases important to turkey and chicken raisers in the Arkansas area. Some topics discussed, and speakers, include: "Coccidiosis," Dr. Neal F. Morehouse, head of the firm's protozoology department and manager of the research farm; "Blackhead," W. J. Orem, educational supervisor; "Respiratory Diseases," Dr. R. R. Rumsey, head of biologics production; "Bluecomb and Cholera," Dr. Owen L. Thompson, head of the industry services department; "Cooperation Through Service to the Industry," H. G. Bos, director of marketing.

A. H. Jeannoutot, district sales manager and master of ceremonies at the meeting, spoke on the importance of disease prevention and Dr. Salsbury's program of help to the poultry industry through territory managers, technical service, research and diagnostic facilities.

POULTRY DISEASE SYMPOSIUM—Dr. R. R. Rumsey of Dr. Salsbury's Laboratories addresses a cross section of the poultry industry attending the recent Poultry Disease Symposium held at Fayetteville, Ark. The program was sponsored by Dr. Salsbury's, and attracted about 200 people.

MARKETS

(Continued from page 3)

the same lackadaisical pattern developed during the past month. Sales hold up very well in the early part of the week only to dwindle away as the week progresses.

Pig and hog feed sales are fair, but the volume from this source is not heavy enough as yet to overcome the slump in cattle and dairy feed business. Chick starter sales are picking up with some mills predicting their total will compare favorably with a year ago.

Generally, expectations are for improved business during the last half of the month, but at present mills are forced to limit their operating times to a scant five days.

Ohio Valley

With corn planting started this week in the Ohio Valley under clear skies and continuing warm temperatures, farmers were giving but little if any attention to animal feeds, with the result that sales are well below those recorded a year earlier when the spring planting season was more normal than it has been this year.

The continuing lack of sufficient rainfall throughout the valley is another factor of concern to everyone in any way associated with the feed business. Despite heavy but brief storms, rainfall this spring is still more than 2 in. below normal, and farmers in numerous upstream areas are reported to be hauling water to their dry cisterns from the Ohio River and nearby streams—an activity usually delayed until much later in the summer season.

The continuing softness of the egg and poultry markets also is detrimental to the feed business. This week, egg prices eased off another 2@3¢ doz. at valley farms, with supplies well above wholesale requirements. As a result, much of the excess production has been moving to breakers and into storage, but wholesalers are hopeful that the lower retail prices will stimulate consumer demand. With retail demand for poultry also soft, supplies were described as "ample."

Mountain States

Feed business for the past week has been slow with most mills operating on reduced shifts. Cattle on feed in farmer lots are fast being depleted as those on winter feed reach a finish.

Moisture during the past week will increase pastures but a week of cold weather has slowed early spring growth. Wheat pastures are being grazed in the plains. Most dairy cattle still are being fed in drylot as pastures are not yet ready for heavy grazing.

Most feed prices remain steady.

Pacific Northwest

Formula feed business continued seasonally good this week throughout Oregon, Washington and Idaho, with representative mixers reporting that recent cool, rainy weather had extended the heavy feeding season. Expanded poultry flocks maintained the volume feeding of all lines of poultry rations.

Pacific Northwest feedstuffs prices followed a mixed trend this week, with trading in principal ingredients listed as fair, while varying supply and demand conditions were responsible for the irregular price situation.

Buying interest appeared to be mostly limited to immediate and prompt shipments, and offerings of some items tightened while others looked more liberal.

Animal protein feed listings featured a $2.50 ton drop in meat and bone meal as a reflection of increased offerings. Soybean meal values advanced as much as $1.50 ton in the face of a tightened supply and an improved demand.

Cottonseed meal listings closed mostly $1 ton lower due to lower truck freight rates, while linseed and copra meal quotations ruled about steady. Wheat millrun prices declined $1@2 ton as a result of larger offerings and a slow demand. Alfalfa meal values were mixed, with dehydrated material $1 lower, while suncured meal remained unchanged.

Whole feeding grains averaged a little lower for the week, with offerings appearing to exceed the moderate buying interest at most quarters.

Pacific Northwest alfalfa hay prices were unchanged to $1 ton lower as a result of a dull trade and an easy trend for the adequate supplies.

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New Dean at Missouri

COLUMBIA, MO. — Dr. Elmer R. Kiehl, professor of agricultural economics, has been appointed dean of the University of Missouri College of Agriculture effective Sept. 1, according to Dr. Elmer Ellis, university president.

Merck Cites Work On New Coccidiostat

RAHWAY, N.J. — The chemical division of Merck & Co., Inc., this week called attention to its research laboratories' discovery of a compound said to "give promise of being an important new coccidiostat."

James E. McCabe, marketing director for agricultural products, said that the new product has the generic name of amprolium and will be marketed under the tradename Amprol.

In a letter to the trade, he said, "While Amprol is still in the research stage and is not yet commercially available, preliminary studies have been so encouraging that we are providing this progress report to members of the feed industry. Amprol is a member of a class of chemicals entirely unrelated to any of the present coccidiostats. It was selected from a massive screening program, involving thousands of compounds, as the one that appears to provide the best combination of characteristics for an ideal coccidiostat."

Mr. McCabe said that a new drug application for Amprol has been submitted to the Food and Drug Administration and that FDA concurrently is considering it as a food additive. Formal announcement of the filing of the food additive petition is expected soon. This was described as a formal step towards final clearance at a later date.

Meanwhile, he said, more field testing is being conducted. "Our program calls for stepping up tests in our own farm facilities, and, as production expands, for enabling feed manufacturers to conduct their own evaluations," Mr. McCabe added.

Construct Feed Plant

MALTA, MONT. — Construction of the new Phil-Co-Feeds mill in Malta is well underway. The $175,000 roller mill and feed plant is expected to be operating at full capacity by harvest time this year.

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